

IV. Human Presence: Experiences and Evaluation

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Denali backpacker survey respondents were asked a variety of questions to assess the impact of human's presence in the backcountry. The presence of humans may be experienced directly through encounters with other backpackers or with park rangers or indirectly through impacts humans have had on the environment such as trampled vegetation or litter. This section describes backpackers' experiences with the presence of humans during their backcountry trip and their evaluations of those experiences.

Questions assessing backpackers' experiences with the presence of humans during their trip were included in the diary and mail survey components (see Appendices B, C, and E for the complete surveys). As discussed in the Introduction (see page 4), the population to which the findings are generalizable varies for the different surveys. All data collected in the mail questionnaire are considered representative of all overnight backcountry hikers. One individual from each hiking party completed the diary. It is reasonable to assume that the descriptive observations made by these respondents (e.g., the number of aircraft they heard/saw) represent the conditions experienced by their hiking party. It is more questionable however whether these individuals' evaluations of their experience represent all members of their party's reactions. The extent (if at all) to which their reactions data might differ from hiking parties in general can not be determined from these data. Therefore, questions from the diary that are evaluative in nature (e.g., how did you feel about the number of other hikers) are considered to be representative only of the respondents selected to represent their hiking party and are labeled accordingly.

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Highlights

- Fewer than half of hikers (40.1%) preferred to see no other hiking parties during their trip (see Figure 4.1). About one fourth of hikers (22.5%) preferred seeing more than one hiking party on a typical day with 5.4 percent of hikers preferring to see more than 2 hiking parties on a typical day. About 16 percent of hikers had no preferences.
- Most hikers encounter fewer hiking parties per day than managers' present objective of no more than two per day. Across their whole trip, one fourth of hiking parties saw no other hiking parties, over half (56.9%) of hiking parties saw an average of less than one other hiking party per day, and most hiking parties (85.2%) saw an average of less than two other hiking parties per day (see Figure 4.2). Hiking parties saw on average 1.11 hiking parties per trip day (see Figure 4.2) and interacted with .65 hiking parties per trip day (see Figure 4.4). Over the course of their whole trip, hiking parties saw on average 3.07 hiking parties (see Figure 4.5) but only interacted on average with 1.65 hiking parties per trip (see Figure 4.6).
- Averaging across trip days, most respondents selected to represent their hiking party (80.9%) felt that the number of other hiking parties they saw was about the right number (see Figure 4.3).
- About 15 percent of hikers reported seeing more hiking parties than they expected (see Figure 4.10). About 14 percent of hikers reported that the number of hiking parties detracted from their overall enjoyment (see Figure 4.11). The question of whether these are the same people can be addressed by further analyses.
- About 15 percent of hikers behaved in ways to avoid other hiking parties (see Figure 4.7). Most of them (78.7%) hiked in (or avoided) particular areas (see Figure 4.8).

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- The majority of hikers (81.6%) preferred (see Figure 4.12) and most hiking parties (81.0%) did not experience any hiking parties camped within sight or sound of their camp on any night of their stay in the backcountry of DENA (see Figure 4.15). A small percentage of hiking parties (7.6%) had an average of at least one hiking party camped within sight or sound of their camp per trip day (see Figure 4.13). The average feeling rating about the number of hiking parties camped within sight or sound per trip day for most respondents selected to represent their hiking party (84.6%) indicated that they saw about the right number (see Figure 4.14). Slightly more than 10 percent of respondents selected to represent their hiking party had more hiking parties camped nearby than they preferred.
- Although the park is not consistently meeting the current management objective that hiking parties should not encounter park rangers more than once per trip, the current level of encounters with park rangers did not detract from the vast majority of hikers' overall trip enjoyment. A total of 17.7 percent of hiking parties encountered more than one park ranger during their trips (see Figure 4.18); however, Figure 4.20 shows that only 4.2 percent of hikers felt that the number of park rangers they saw reduced their overall trip enjoyment (and some of those may have been dissatisfied because they did not see rangers). About two-thirds (69.4%) of hiking parties never saw a park ranger during their trip (see Figure 4.18) and almost three-fourths (73.6%) of hiking parties did not interact with a park ranger during their backcountry trip (see Figure 4.19).
- The most commonly reported type of evidence of human use seen by hikers was hiker trails (64.5% of hikers; see Figure 4.21), but more than half (61.2%) of hikers who saw hiker trails were not bothered by the trails (see Figure 4.22). Litter, the third most frequently seen (15.3%) evidence of human use, had the largest percentage of hikers (51.6%) reporting being very bothered by it of any of the types of evidence of human use seen (see Figures 4.22-4.28).

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- Over one-third (37.0%) of hikers reported that the amount of evidence of human use they saw was what they expected to see (see Figure 4.30). A total of 10.6 percent of hikers reported seeing more evidence than they expected. Local-Alaskan hikers were more likely to report seeing less or a lot less evidence than expected (27.3%) than non-local Alaskan hikers (2.9%) or non-Alaskan hikers (12.2%; see Figure 4.31).
- The majority (84.3%) of hikers reported feeling not at all crowded in the backcountry (see Figure 4.32). Of those hikers who reported feeling crowded to some extent, number of hiking parties (all or day hikers) and other factors were reported as contributing the most to their feeling crowded (see Figures 4.33-4.38). Review of the written in responses for other factors indicated that the two most common other factors corresponded to buses (9 of 23 hikers) and to air traffic (5 of 23 hikers).

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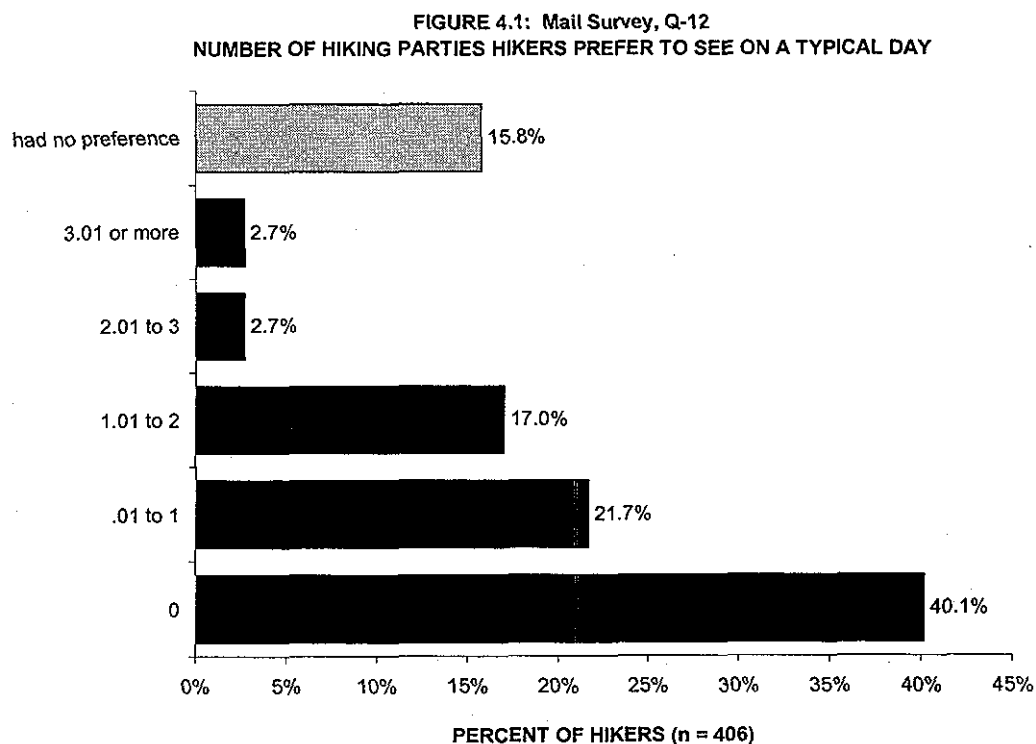
Encounters with Hiking Parties

Number of Hiking Parties Prefer to See on a Typical Hiking Day

Mail Survey

12. What is the number of hiking parties (all types) that you would **prefer** to see on a typical hiking day during a backpacking trip in the Denali backcountry? *(Please enter a number, or circle number 2 if you have no preference.)*

- 1 NUMBER OF PARTIES _____
2 I HAVE NO PREFERENCE _____



Number of Hiking Parties Seen Per Day

In both versions of the diary, respondents were asked daily to report on the number of other hiking parties they saw (see below for exact wording of the question). Because the data were collected on a daily basis and then aggregated to represent each backpacking party's trip, five summary values represent the data for this question: 1) the

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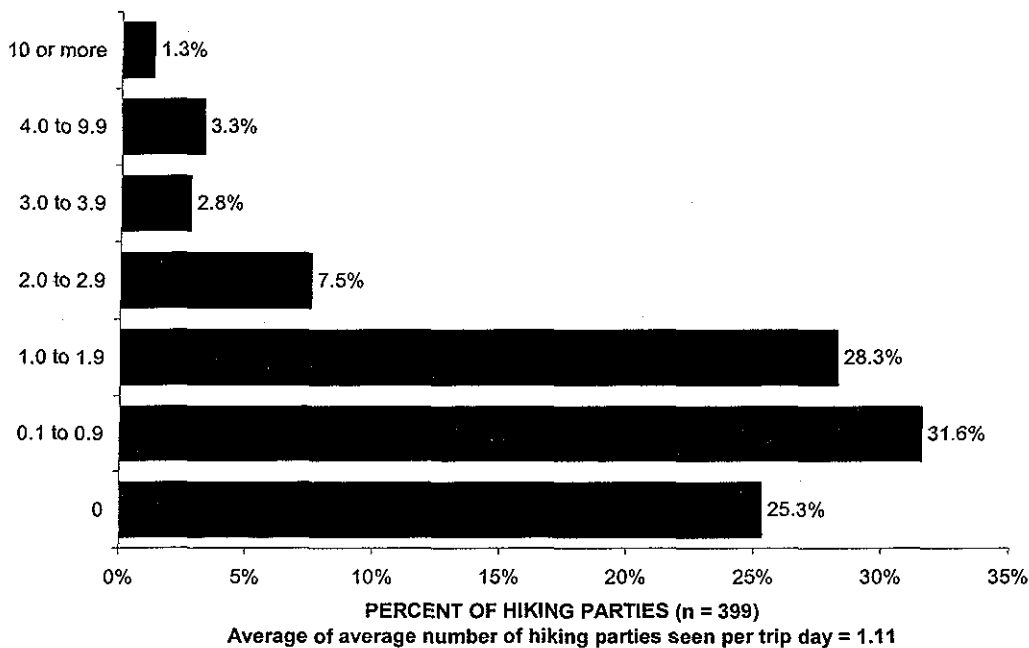
average per trip, 2) the maximum per trip, 3) the minimum per trip, 4) the standard deviation across trip days, and 5) the total number per trip. The average number of hiking parties seen per trip is reported below and the total number of hiking parties seen per trip is reported later in the chapter (see page 62). Charts of all the summary data are presented in Appendix G.

The *Average per Trip Day* represents the total number of hiking parties seen reported during a trip divided by the number of trip days. Because partial hiking days could be reported on the first and/or last day of the diary, the presented averages are low estimates of hiking parties seen per full hiking day.

Diary, Versions 1 & 2

5. How many different hiking parties did you see today? _____

FIGURE 4.2: Diary (aggregated), Q-5
AVERAGE NUMBER OF HIKING PARTIES SEEN PER TRIP DAY



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Feelings about the Number of Hiking Parties Seen Today

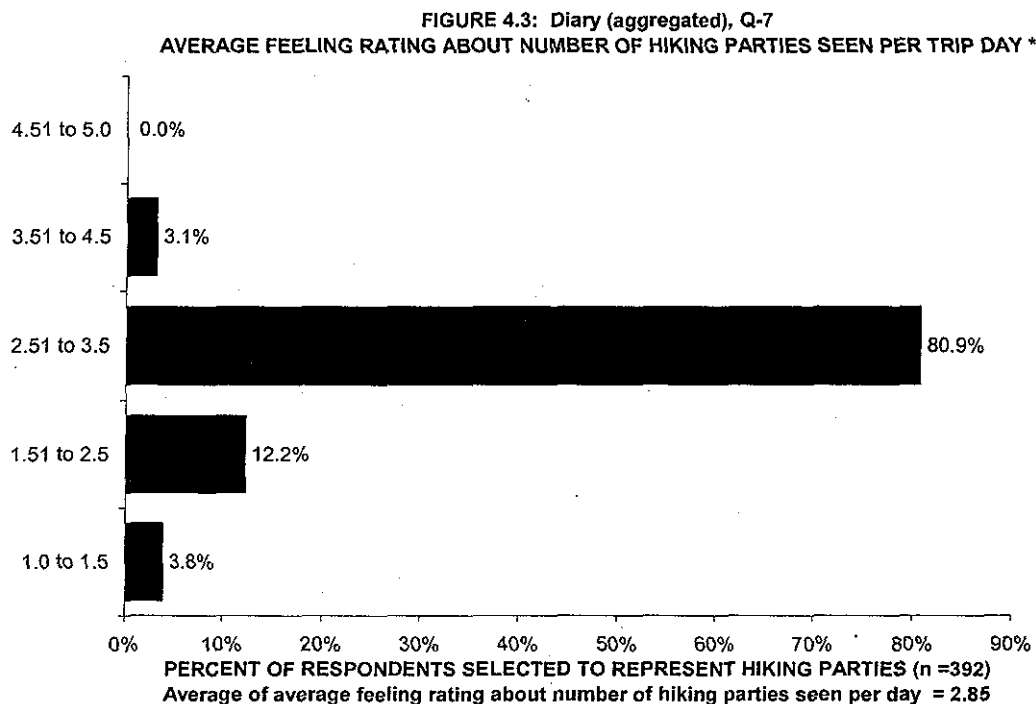
In both versions of the diary, respondents were asked daily to report on how they felt about the number of other hiking parties they saw (see below for exact wording of the question). Because the data were collected on a daily basis and then aggregated to represent each respondent's trip, four summary figures represent the data for this question: 1) the average per trip, 2) the maximum per trip, 3) the minimum per trip, and 4) the standard deviation across trip days. The average feeling rating for number of hiking parties seen per trip day is reported below, and charts of all the summary data are presented in Appendix G.

The *Average Feeling Rating about Number of Hiking Parties Seen per Trip Day* represents the sum of the feeling ratings of the number of hiking parties seen each day divided by the number of trip days for a respondent selected to represent a party. Days may include partial hiking days from the first and/or last day of the diary.

Diary, Versions 1 & 2

7. Which of the following best describes how you feel about the number of hiking parties you saw today?
(List number that describes your feelings)
1. Saw too many, preferred seeing none
 2. Saw too many, preferred seeing less
 3. Saw about the right number
 4. Saw too few, preferred seeing more
 5. Saw too few, preferred seeing many more

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*Taking the average results in values that fall between the response options

Number of Hiking Parties Interacted with Each Day

In both versions of the diary, respondents were asked daily to report on the number of other hiking parties they interacted with (see below for exact wording of the question). Because the data were collected on a daily basis and then aggregated to represent each backpacking party's trip, five summary figures represent the data for this question. The average number of hiking parties interacted with per trip day is reported below and the total number of hiking parties interacted with per trip is reported later in the chapter (see page 63). Charts of all the summary data are presented in Appendix G.

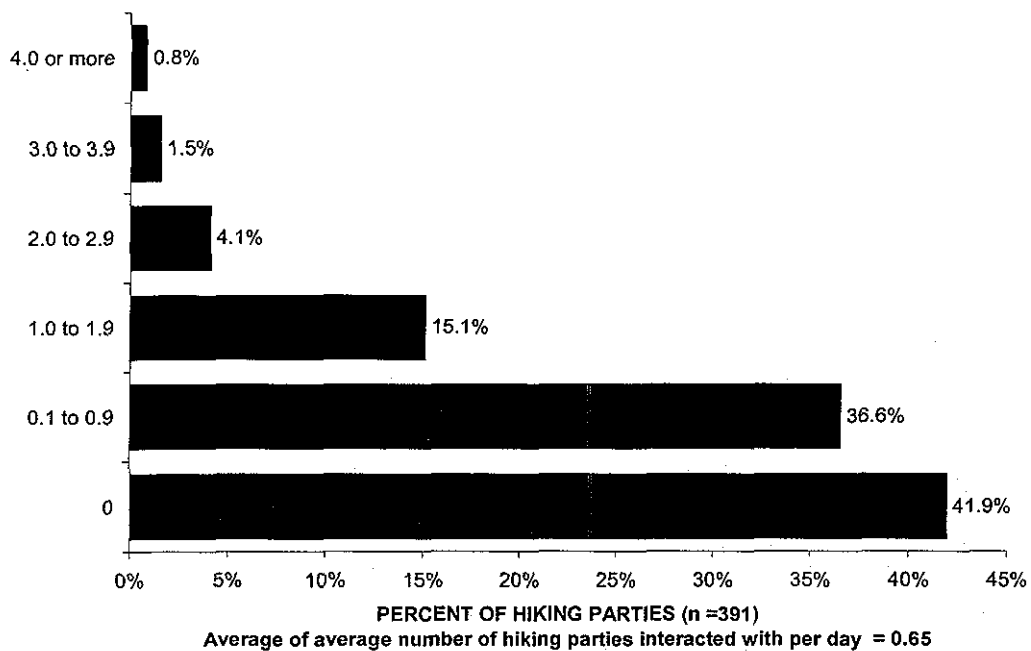
The *Average Number of Hiking Parties Interacted with per Trip Day* represents the total number of hiking parties interacted with reported during a trip divided by the number of trip days. Because partial hiking days could be reported on the first and/or last day of the diary, the presented averages are low estimates of hiking parties interacted with per full hiking day.

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Diary, Versions 1 & 2

6. How many times did you interact with hiking parties today? (e.g., talk to or exchange greetings, either verbal or non-verbal). _____

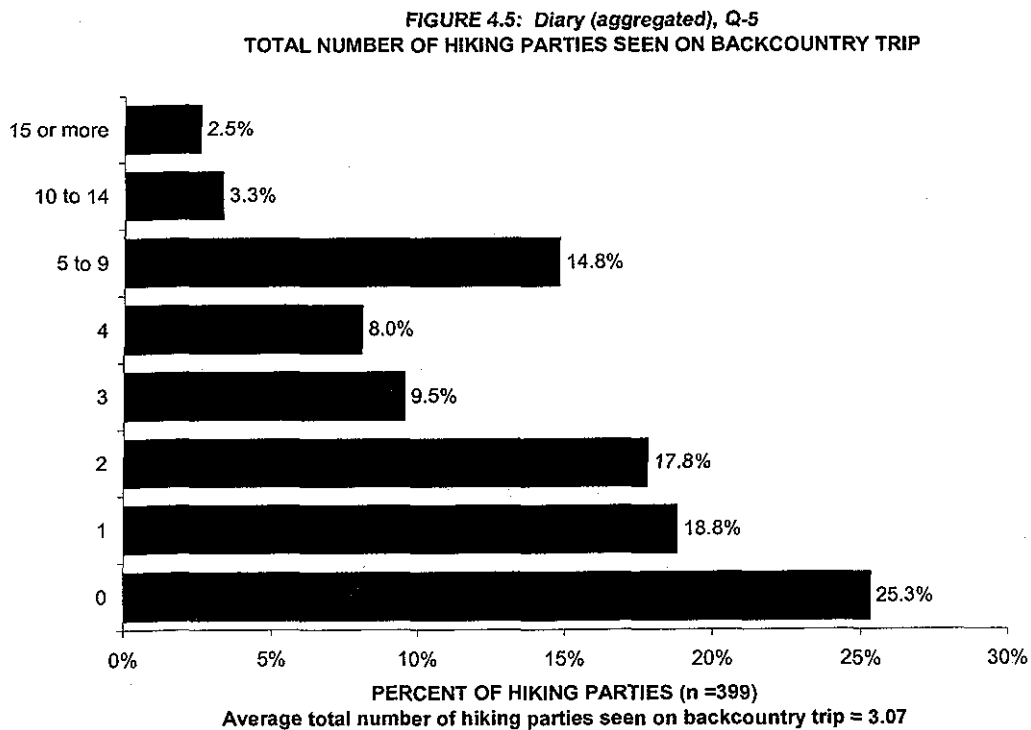
FIGURE 4.4: Diary (aggregated), Q-6
AVERAGE NUMBER OF HIKING PARTIES INTERACTED WITH PER TRIP DAY



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Total Number of Hiking Parties Seen on Trip

The *Total Number of Hiking Parties Seen per Trip* is simply the total number of hiking parties seen during a trip. It is calculated by summing the number of hiking parties seen reported each day.

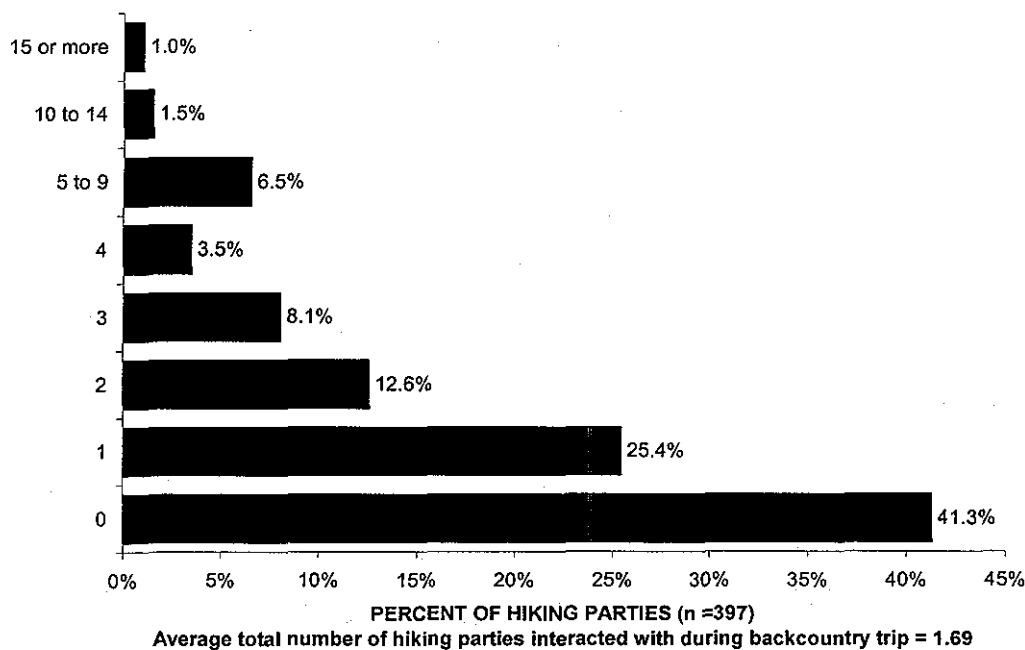


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Total Number of Hiking Parties Interacted with on Trip

The *Total Number of Hiking Parties Interacted with per Trip* is simply the total number of hiking parties interacted with during a trip. It is calculated by summing the number of hiking parties reported being interacted with each day.

FIGURE 4.6: Diary (aggregated), Q-6
TOTAL NUMBER OF HIKING PARTIES INTERACTED WITH DURING BACKCOUNTRY TRIP



Behaved in a Way to Avoid Other Hiking Parties

Mail Survey

11a. Once you began your backcountry trip, did your party behave in such a way so as to avoid other hiking parties? (Circle one number)

1 NO → GO TO QUESTION 12

2 YES → 11b. How did you avoid other parties? Did you.... (Circle as many as apply.)

- 1 Hike at particular times of day
 - 2 Hike in (or avoid) particular areas
 - 3 End your hike and leave the backcountry earlier than you would have
 - 4 Other effects not described (Please specify below.)
- _____

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FIGURE 4.7: Mail Survey, Q-11a
HIKER'S PARTY BEHAVED TO AVOID OTHER PARTIES

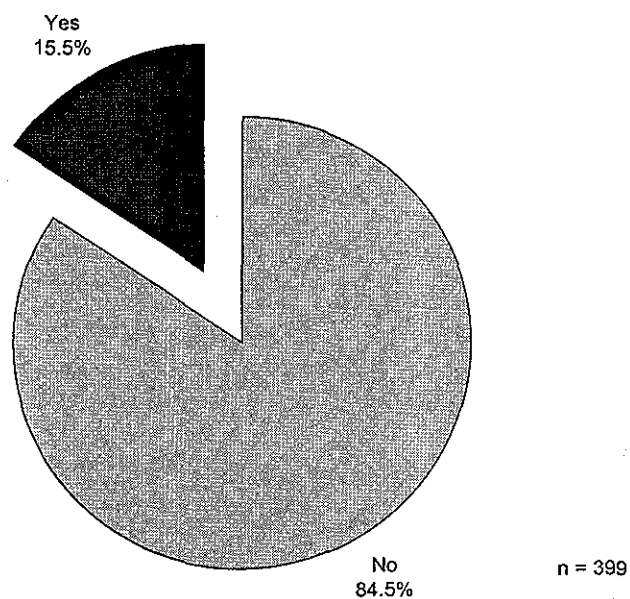
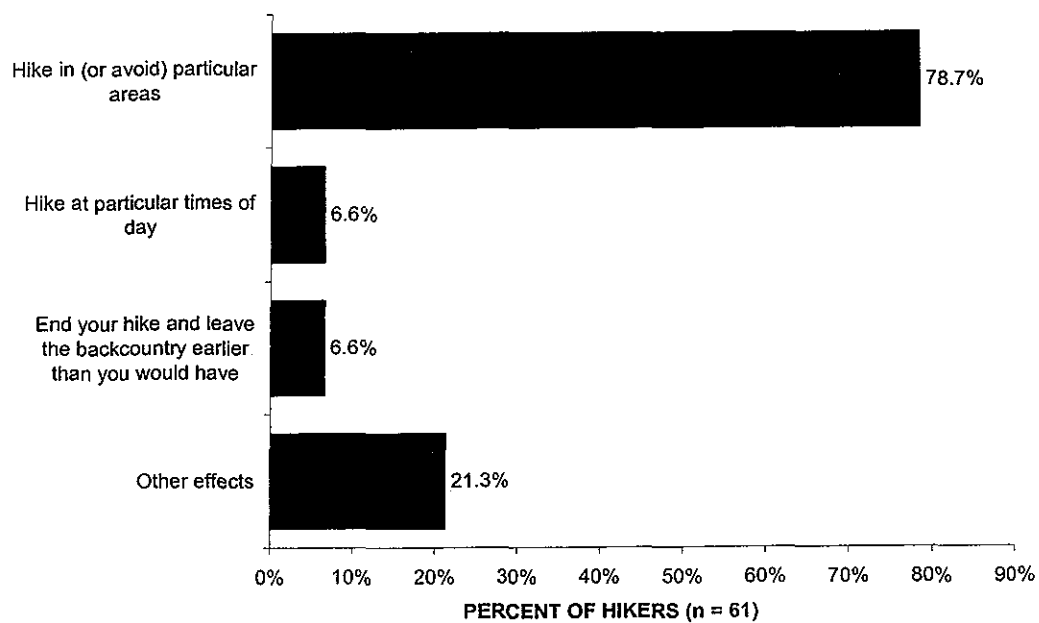


FIGURE 4.8: Mail Survey, Q-11b
BEHAVIORS ENGAGED IN TO AVOID OTHER PARTIES



Includes only the 15.5% of hikers who said they behaved in ways to avoid other parties.
Percentages sum to more than 100 because hikers may have behaved in multiple ways to avoid others.

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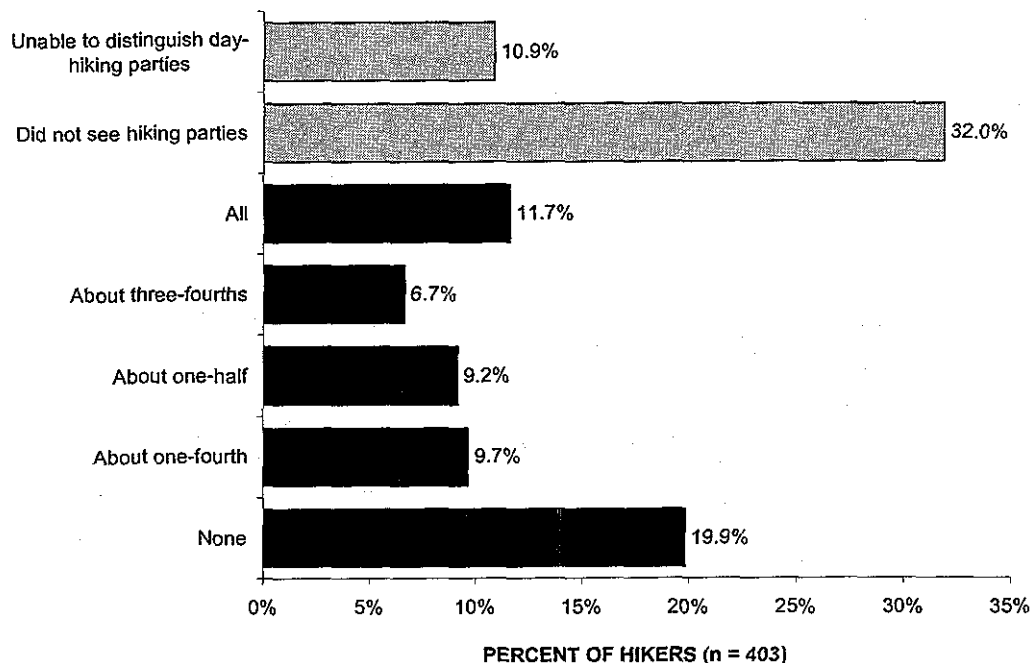
Proportion of Total Hikers that were Dayhikers

Mail Survey

7. Of the hiking parties you saw on this overnight backcountry trip, about how many were **day-hiking** parties? (*Please circle the appropriate number.*)

- 1 Did not see hiking parties
- 2 Was unable to distinguish day-hiking parties from other parties
- 3 None
- 4 About one-fourth
- 5 About one-half
- 6 About three-fourths
- 7 All

FIGURE 4.9: Mail Survey, Q-7
PROPORTION OF HIKING PARTIES SEEN BY HIKERS THAT WERE DAYHIKERS



Note: The percentage of *hikers* reporting not seeing any hiking parties is 32.0% while the percentage of *hiking parties* reporting not seeing any hiking parties is 25.3% (see Figure 4.5). In addition to being different samples, it is possible that the length of time between the experience and recollection may be contributing to the observed differences. It is not possible, however, to determine the extent to which either of these factors have an influence.

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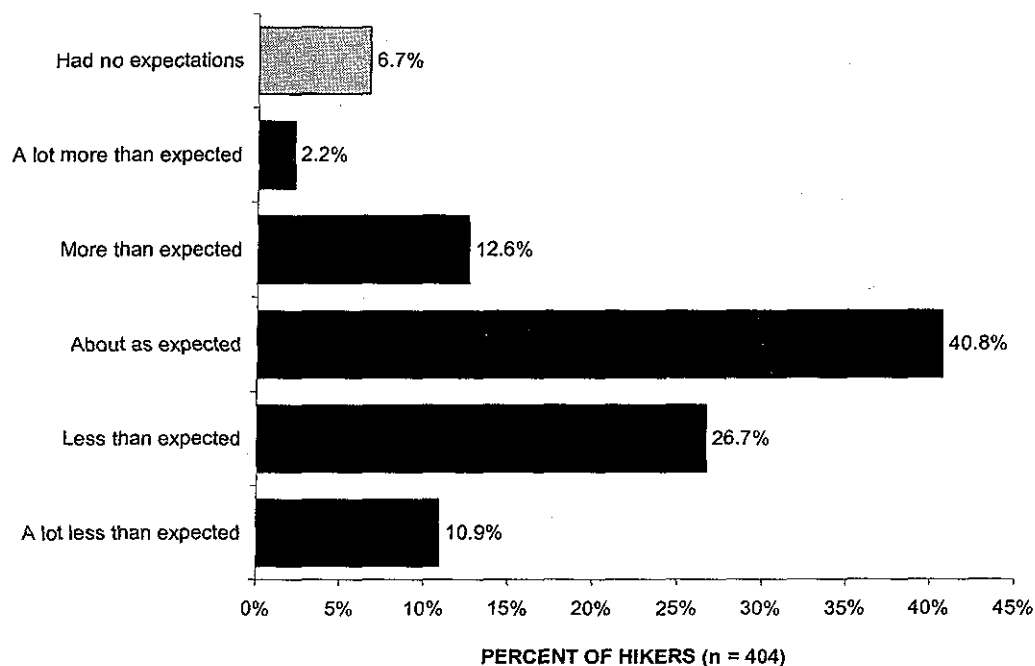
Number of All Hiking Parties Seen Versus Expected to See

Mail Survey

8. How did the number of hiking parties (all types) you saw compare with the number you thought you would see? *(Please circle the appropriate number, even if you did not see hiking parties.)*

- 1 A LOT LESS THAN EXPECTED
- 2 LESS THAN EXPECTED
- 3 ABOUT AS EXPECTED
- 4 MORE THAN EXPECTED
- 5 A LOT MORE THAN EXPECTED
- 6 HAD NO EXPECTATIONS ABOUT THE NUMBER TO BE SEEN

FIGURE 4.10: Mail Survey, Q-8
NUMBER OF ALL HIKING PARTIES SEEN VERSUS EXPECTED TO SEE



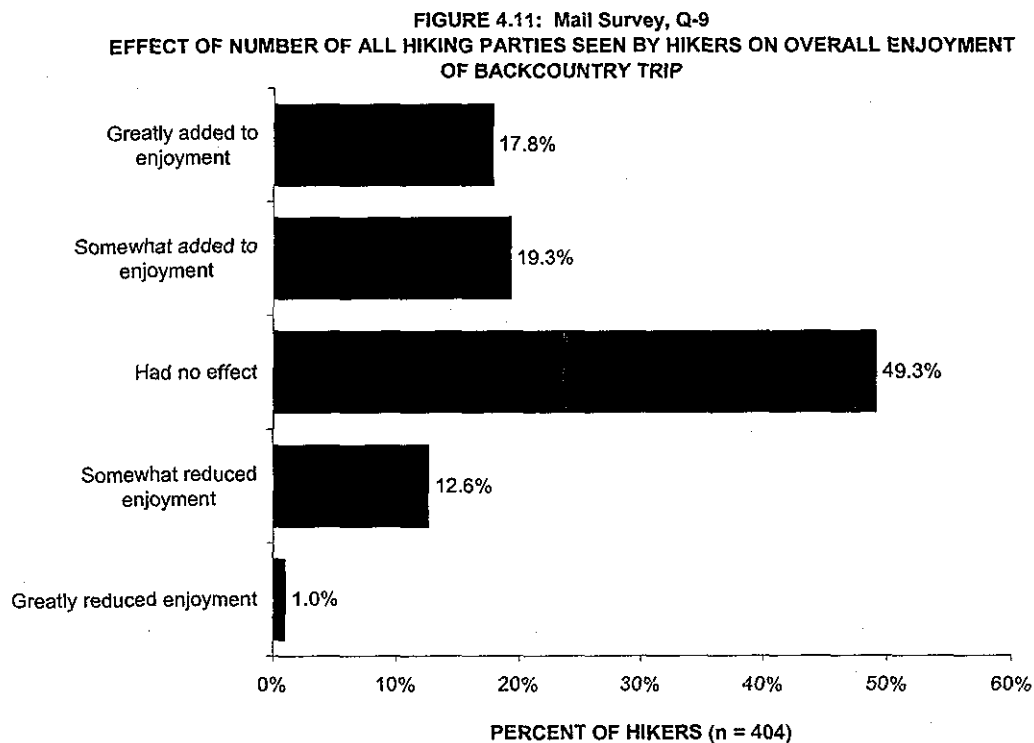
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Effect of Number of Hiking Parties on Overall Enjoyment

Mail Survey

9. How did the number of hiking parties (all types) you saw affect your overall enjoyment of this overnight backcountry trip? *(Please circle one number, even if you did not see hiking parties.)*

- 1 GREATLY ADDED TO ENJOYMENT
- 2 SOMEWHAT ADDED TO ENJOYMENT
- 3 HAD NO EFFECT
- 4 SOMEWHAT REDUCED ENJOYMENT
- 5 GREATLY REDUCED ENJOYMENT



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Encounters with Parties Camped Nearby

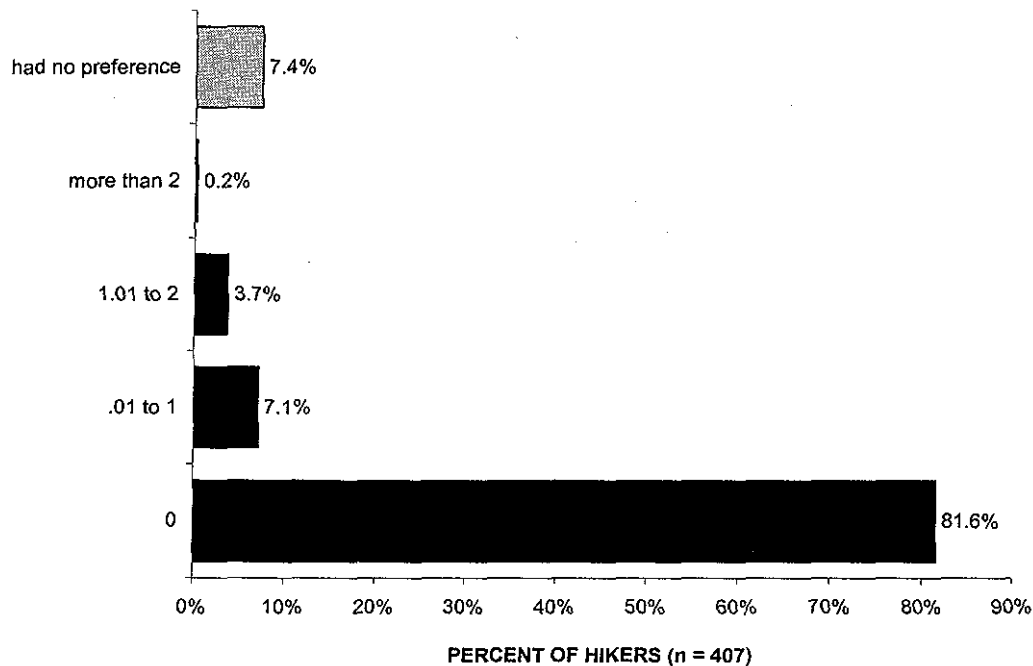
Number of Hiking Parties Prefer to have Camped within Sight and/or Sound

Mail Survey

13. What is the number of hiking parties that you would **prefer** to have camped within sight and/or sound of you at a typical backcountry camp in Denali? *(Please enter a number, or circle number 2 if you have no preference.)*

- 1 NUMBER OF PARTIES CAMPED _____
2 I HAVE NO PREFERENCE

FIGURE 4.12: Mail Survey, Q-13
NUMBER OF HIKING PARTIES HIKERS PREFER TO HAVE CAMPED WITHIN SIGHT/SOUND



Number of Hiking Parties Camped within Sight and/or Sound per Day

In both versions of the diary, respondents were asked daily to report on the number of other hiking parties that camped within sight and/or sound (see below for exact wording of the question). Because the data were collected on a daily basis and then aggregated to represent each backpacking party's trip, five summary values represent the

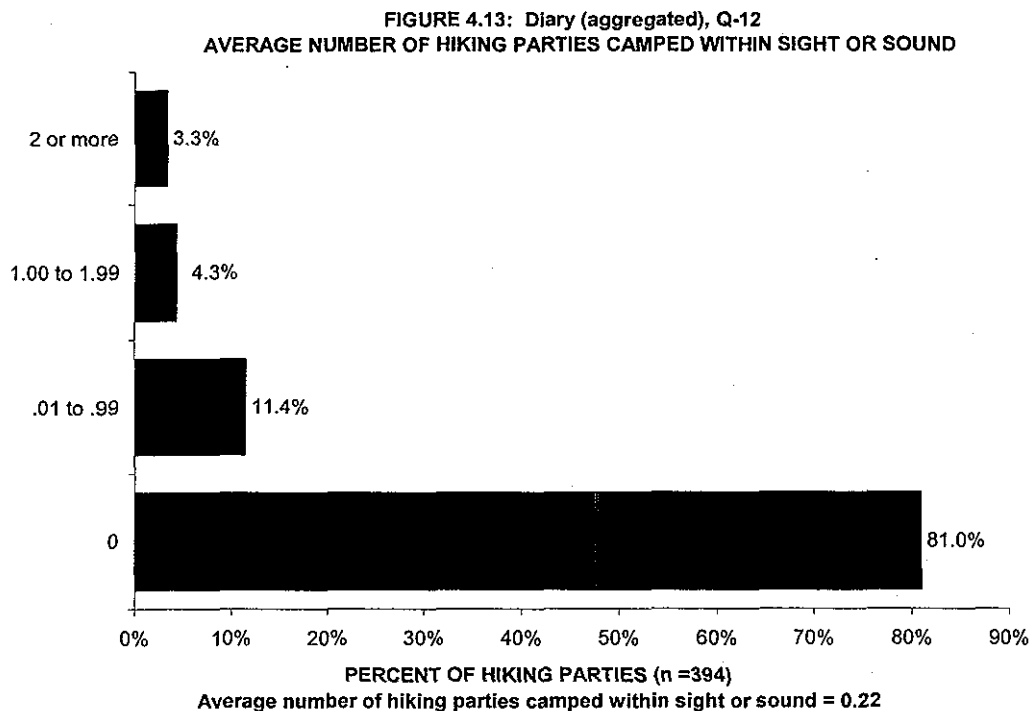
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data for this question: 1) the average per trip, 2) the maximum per trip, 3) the minimum per trip, 4) the standard deviation across trip days, and 5) the total number per trip. The average number of hiking parties camped within sight and/or sound per trip day is reported below and the total number of hiking parties camped within sight/sound per trip is reported later in the chapter (see page 72). Charts of all the summary data are presented in Appendix H.

The *Average per Trip Day* represents the total number of hiking parties camped within sight/sound reported during a trip divided by the number of trip days. Because partial hiking days could be reported on the first and/or last day of the diary, the presented averages are low estimates of hiking parties camped within sight/sound per full hiking day.

Diary, Versions 1 & 2

12. How many hiking parties are camped within sight or sound of your camp today? (If you did not camp, write "NA" for Q-12 and for Q-13.) _____



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Feelings about the Number of Parties Camped within Sight and/or Sound per Day

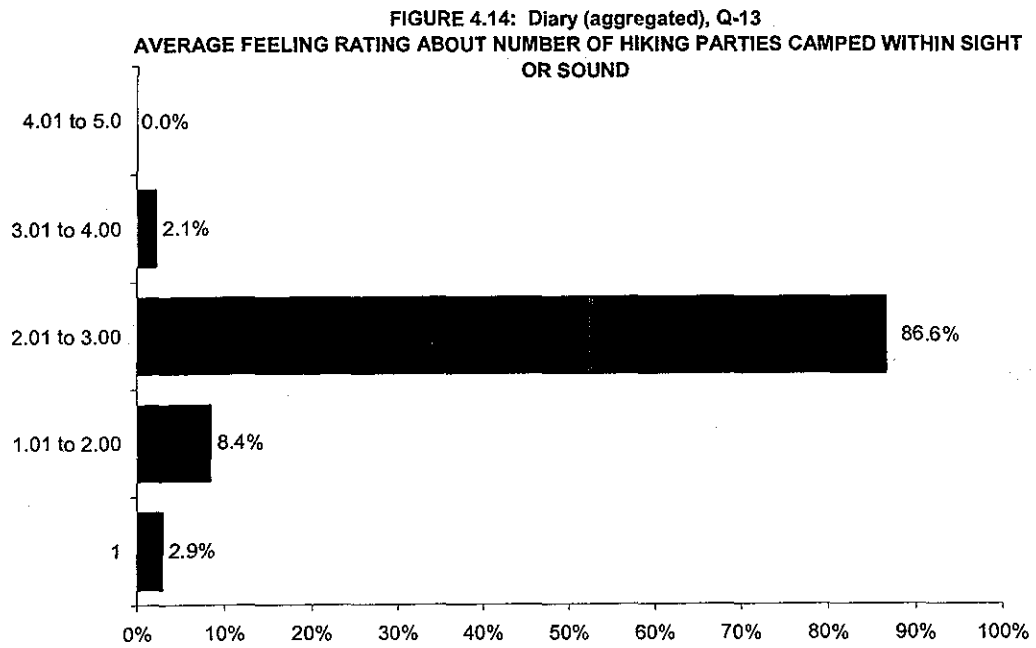
In both versions of the diary, respondents were asked daily to report on how they felt about the number of hiking parties camped within sight and/or sound (see below for exact wording of the question). Because the data were collected on a daily basis and then aggregated to represent each respondent's trip, four summary figures represent the data for this question: 1) the average per trip, 2) the maximum per trip, 3) the minimum per trip, and 4) the standard deviation across trip days. The average feeling rating about the number of hiking parties camped within sight and/or sound per trip day is reported below. Charts of all the summary data are presented in Appendix H.

The *Average Feeling Rating about Number of Hiking Parties Camped within Sight/Sound per Trip Day* represents the sum of the feeling ratings of the number of hiking parties camped nearby each day divided by the number of trip days for a respondent selected to represent a party. Days may include partial hiking days from the first and/or last day of the diary.

Diary, Versions 1 & 2

13. Which of the following best describes how you feel about the number of hiking parties camped within sight or sound of your camp? (*List number*)
1. Saw too many, preferred seeing none
 2. Saw too many, preferred seeing less
 3. Saw about the right number
 4. Saw too few, preferred seeing more
 5. Saw too few, preferred seeing many more

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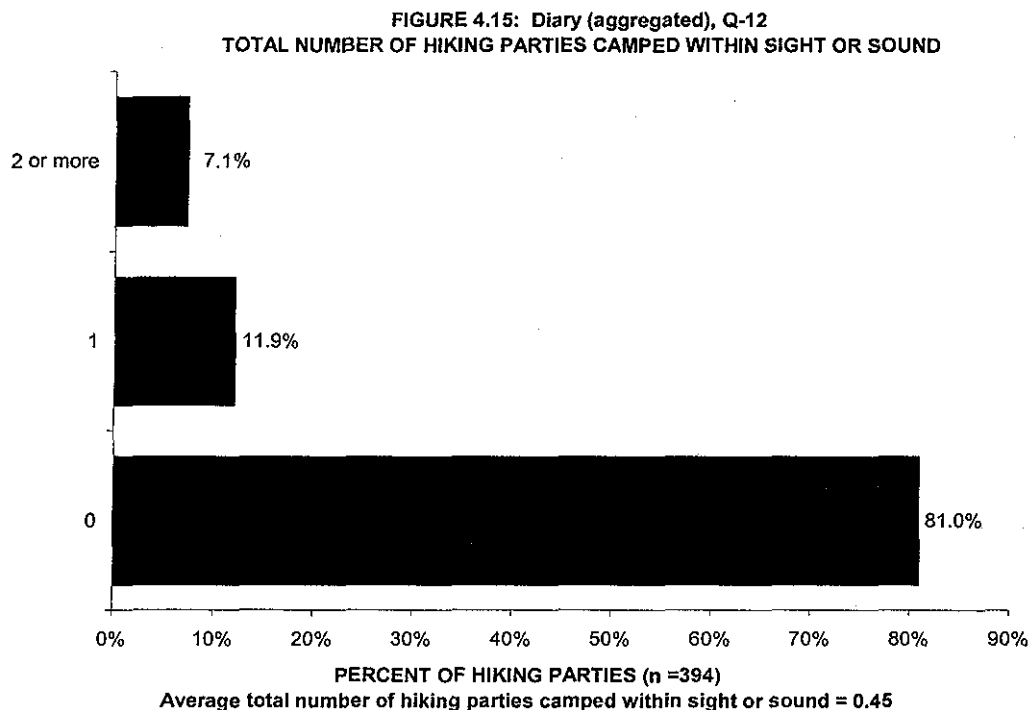
Average of average feeling rating about number of hiking parties camped within sight or sound = 2.91

*Taking the average results in values that fall between the response options

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Total number of Parties Camped within Sight and/or Sound During Trip

The *Total Number per Trip* is simply the total number of hiking parties camped nearby during a trip.



Encounters with Park Rangers

Number of Park Rangers Seen Today

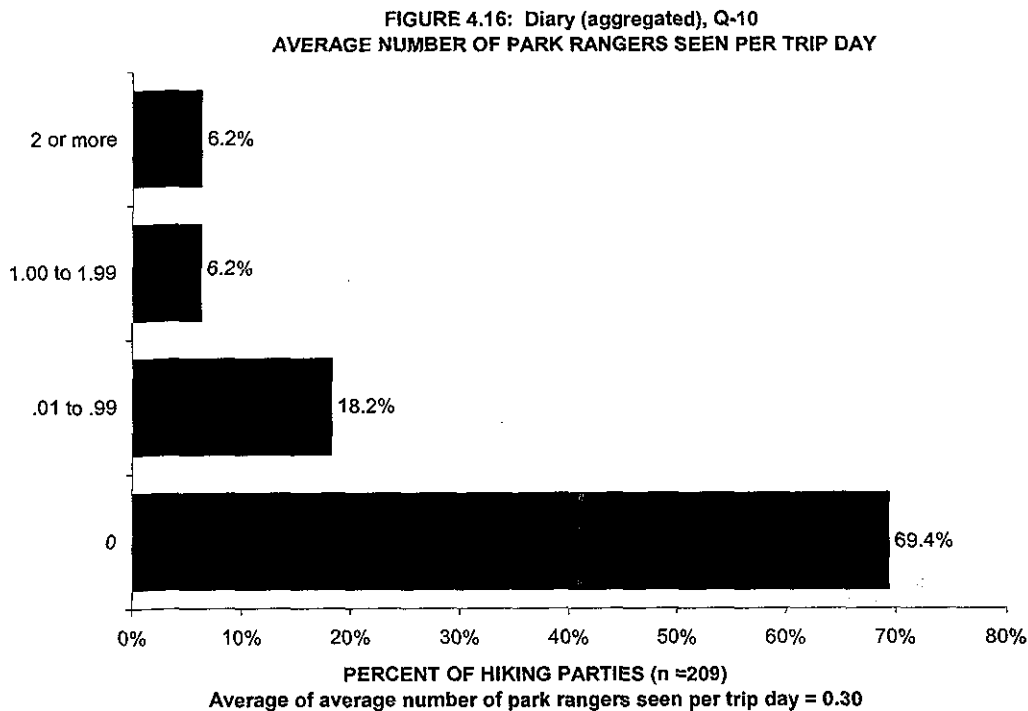
In version 2 of the diary, respondents were asked daily to report on the number of park rangers they saw (see below for exact wording of the question). Because the data were collected on a daily basis and then aggregated to represent each backpacking party's trip, five summary figures represent the data for this question: 1) the average per trip, 2) the maximum per trip, 3) the minimum per trip, 4) the standard deviation across trip days, and 5) total number per trip. The average number of park rangers seen per trip day is reported below and the total number of park rangers seen per trip is reported later in the chapter (see page 75). Charts of all the summary data are presented in Appendix I.

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The *Average per Trip Day* represents the total number of park rangers seen reported during a trip divided by the number of trip days. Because partial hiking days could be reported on the first and/or last day of the diary, the presented averages are low estimates of park rangers seen per full hiking day.

Diary, Version 2

10. How many different park rangers did you see today? _____



Number of Interactions with Park Rangers Today

In version 2 of the diary, respondents were asked daily to report on the number of park rangers with which they interacted (see below for exact wording of the question). Because the data were collected on a daily basis and then aggregated to represent each backpacking party's trip, five summary figures represent the data for this question: 1) the average per trip, 2) the maximum per trip, 3) the minimum per trip, 4) the standard deviation across trip days, and 5) total number per trip. The average number of park

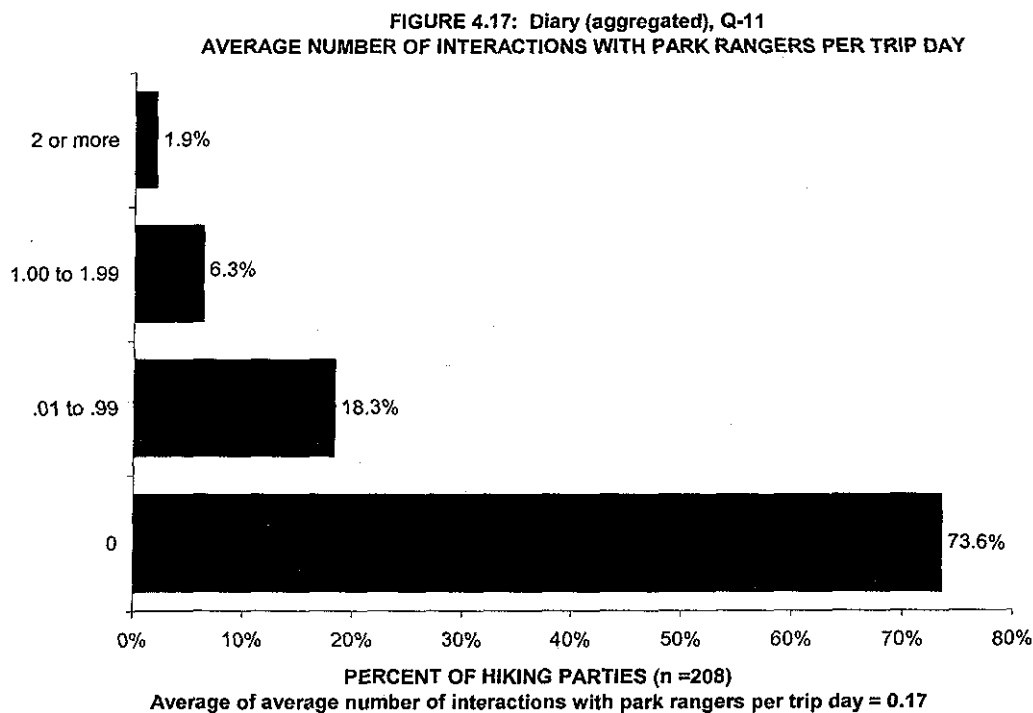
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rangers interacted with per trip day is reported below and the total number of park rangers interacted with per trip is reported later in the chapter (see page 76). Charts of all the summary data are presented in Appendix I.

The *Average per Trip Day* represents the total number of park rangers reported being interacted with divided by the number of trip days. Because partial hiking days could be reported on the first and/or last day of the diary, the presented averages are low estimates of park rangers interacted with per full hiking day.

Diary, Version 2

11. How many times did you interact with park rangers today? (e.g., talk to or exchange greetings, either verbal or non-verbal) _____

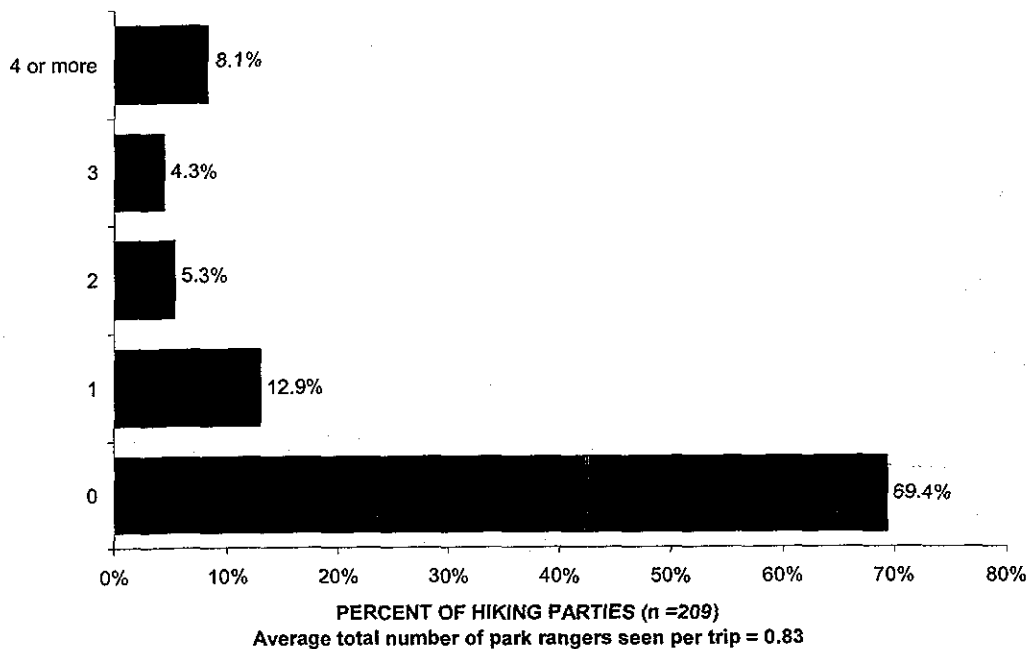


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Total Number of Park Rangers Seen During Trip

The *Total Number of Park Rangers Seen per Trip* is simply the total number of park rangers seen during a trip.

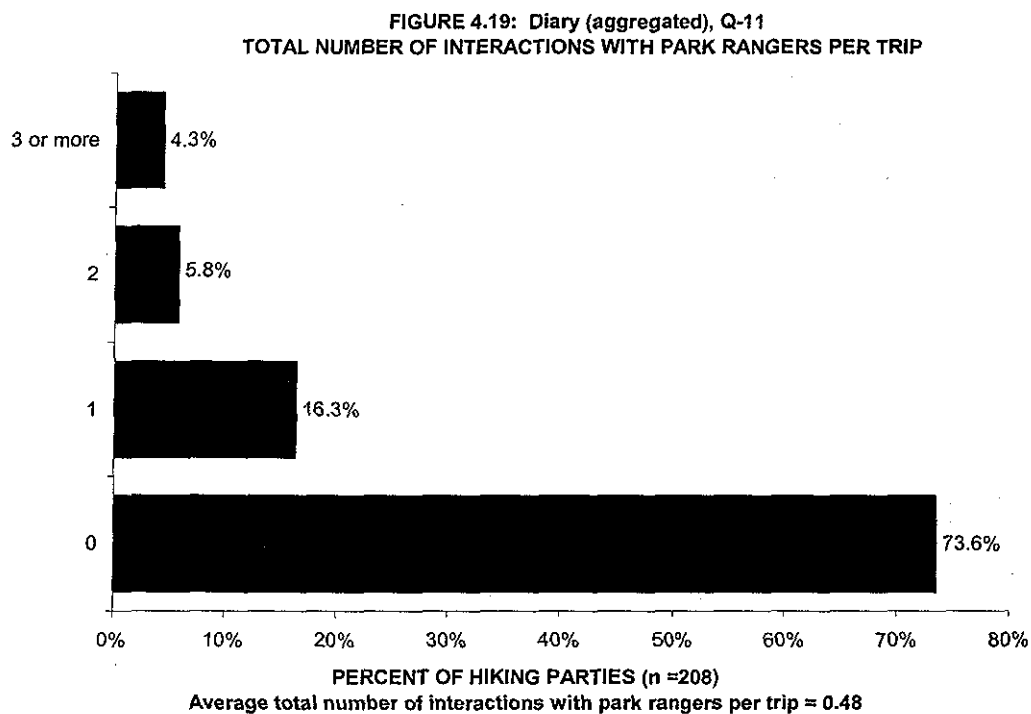
FIGURE 4.18: Diary (aggregated), Q-10
TOTAL NUMBER PARK RANGERS SEEN PER TRIP



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Total Number of Park Rangers Interacted with During Trip

The *Total Number of Interactions with Park Rangers per Trip* is simply the total number of park rangers with which a hiking party interacted during a trip.



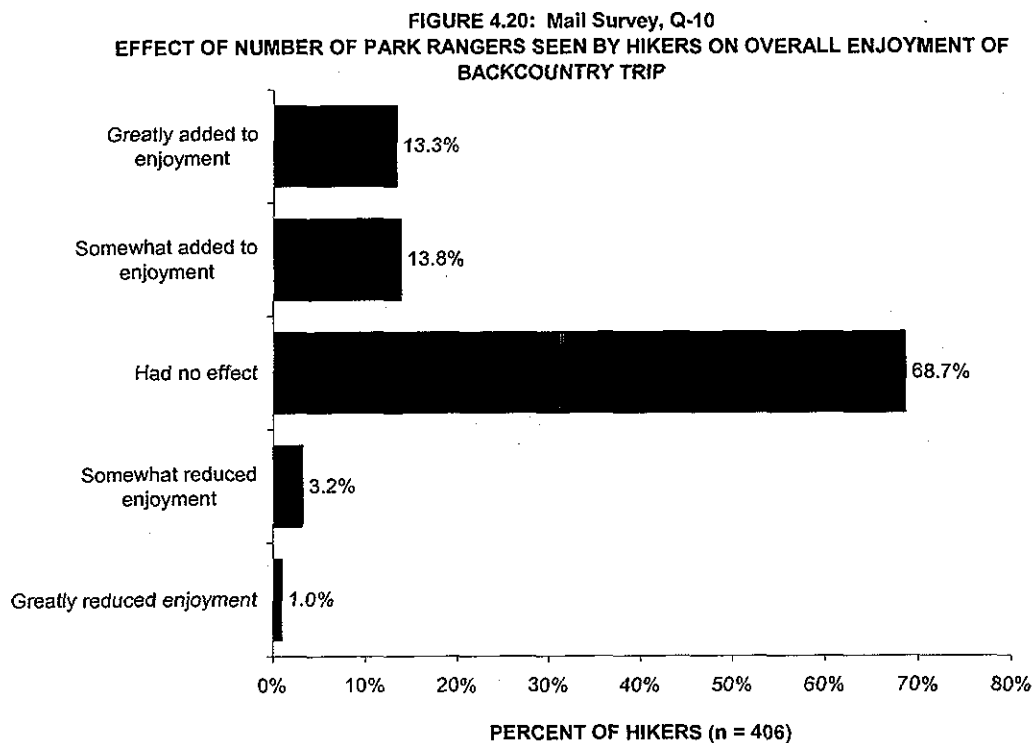
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Effect of Number of Park Rangers on Overall Enjoyment

Mail Survey

10. How did the number of park rangers you saw affect your overall enjoyment of this backcountry trip?
(Please circle one number, even if you did not see park rangers.)

- 1 GREATLY ADDED TO ENJOYMENT
- 2 SOMEWHAT ADDED TO ENJOYMENT
- 3 HAD NO EFFECT
- 4 SOMEWHAT REDUCED ENJOYMENT
- 5 GREATLY REDUCED ENJOYMENT



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Indirect Evidence of Human Presence

Types of Evidence of Humans Observed & Degree it Bothered Respondents

Mail Survey

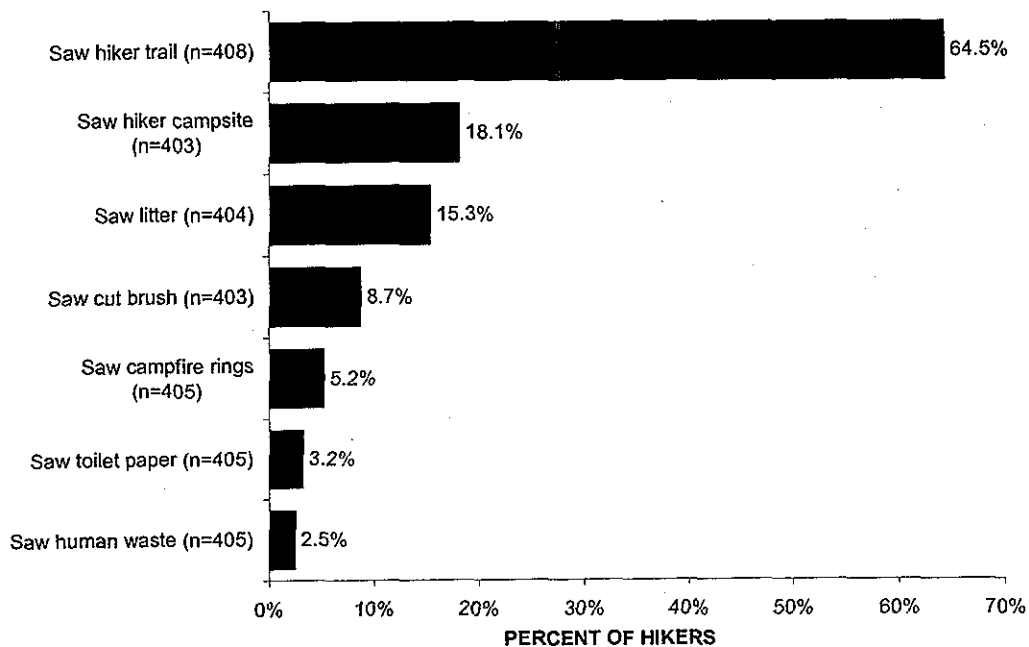
14. Did you see any evidence of human use on this overnight backcountry trip? *(Please circle one letter in the column "Saw evidence?" for each type of evidence of human use you observed in BACKCOUNTRY areas.)*

IF YES, about how much, if at all, did this evidence of human use bother you? *(Please circle one number in the column "IF YES, bothered you?" for those types of evidence of human use you saw.)*

	Saw evidence?			IF YES, bothered you?		
	No	Yes		Not Bothered	Somewhat Bothered	Very Bothered
a) Human waste.....	N	Y	→	NB	SB	VB
b) Toilet paper.....	N	Y	→	NB	SB	VB
c) Campfire rings.....	N	Y	→	NB	SB	VB
d) Litter.....	N	Y	→	NB	SB	VB
e) Cut bushes or trees.....	N	Y	→	NB	SB	VB
f) Hiker-made trails.....	N	Y	→	NB	SB	VB
g) Hiker-made campsites. (for example, soil compaction, vegetation trampling, moved rocks.)	N	Y	→	NB	SB	VB

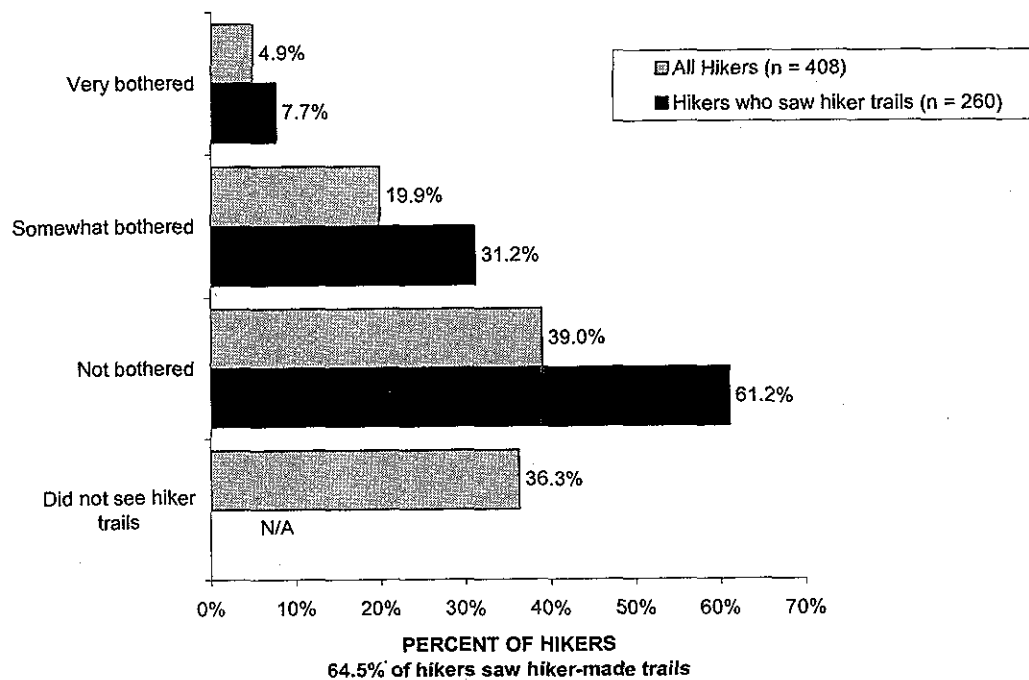
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FIGURE 4.21: Mail Survey, Q-14
PROPORTION OF HIKERS WHO SAW EVIDENCE OF EACH TYPE OF HUMAN USE IN THE BACKCOUNTRY



Percentages sum to more than 100 because hikers could see different types of evidence of human use.

FIGURE 4.22: Mail Survey, Q-14
EXTENT TO WHICH SEEING HIKER-MADE TRAILS BOTHERED HIKER



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FIGURE 4.23: Mail Survey, Q-14
EXTENT TO WHICH SEEING HIKER-MADE CAMPSITES BOTHERED HIKER

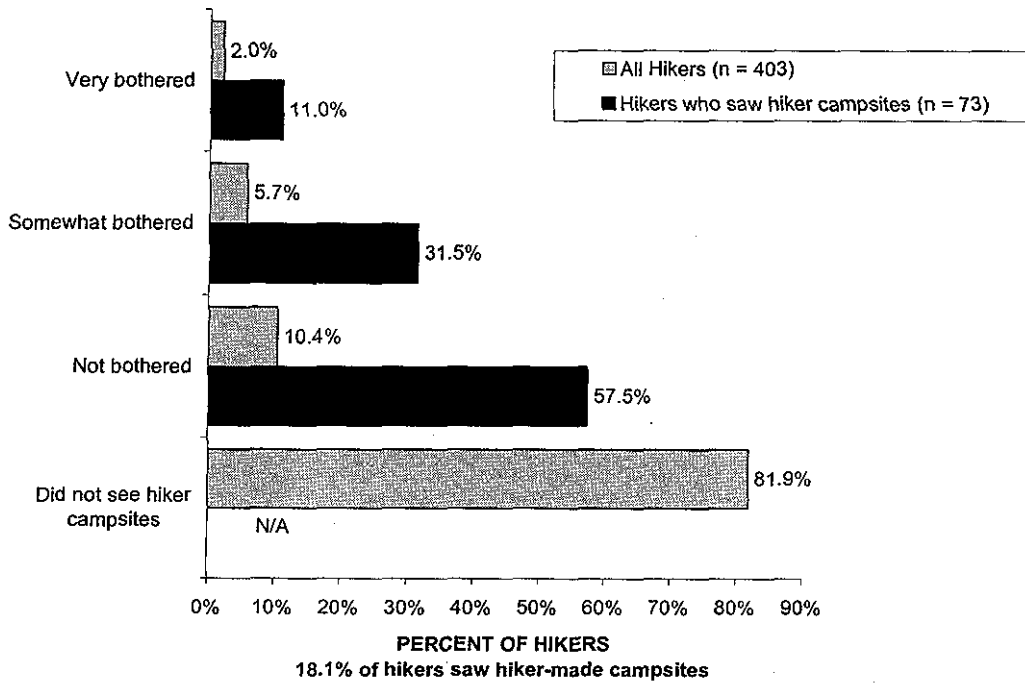
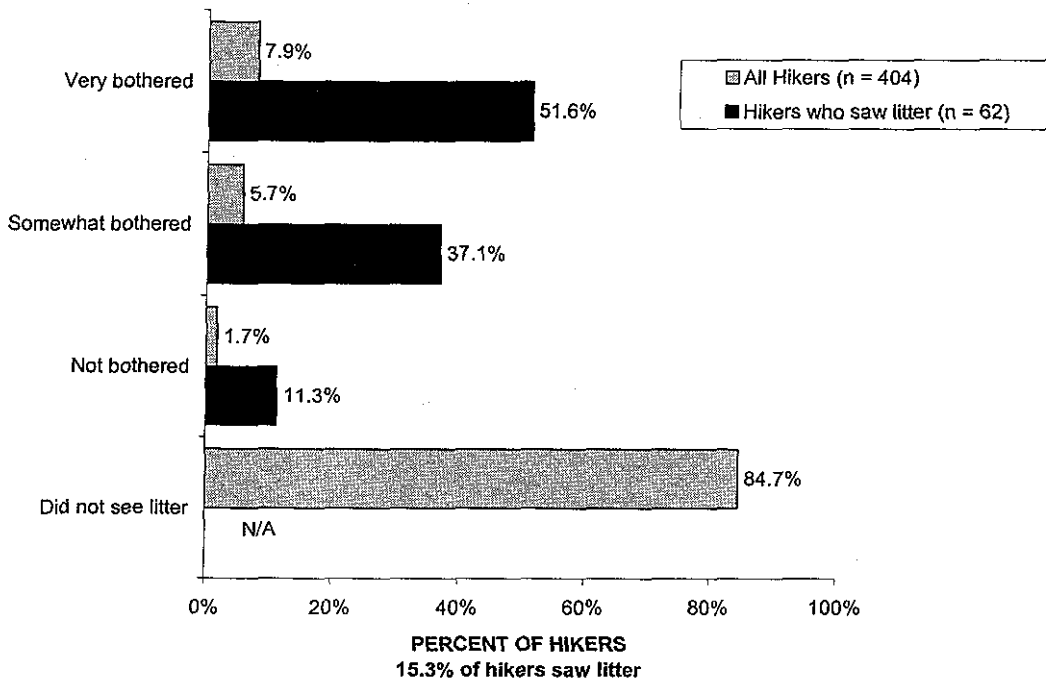


FIGURE 4.24: Mail Survey, Q-14
EXTENT TO WHICH SEEING LITTER BOTHERED HIKER



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FIGURE 4.25: Mail Survey, Q-14
EXTENT TO WHICH SEEING CUT BRUSH BOTHERED HIKER

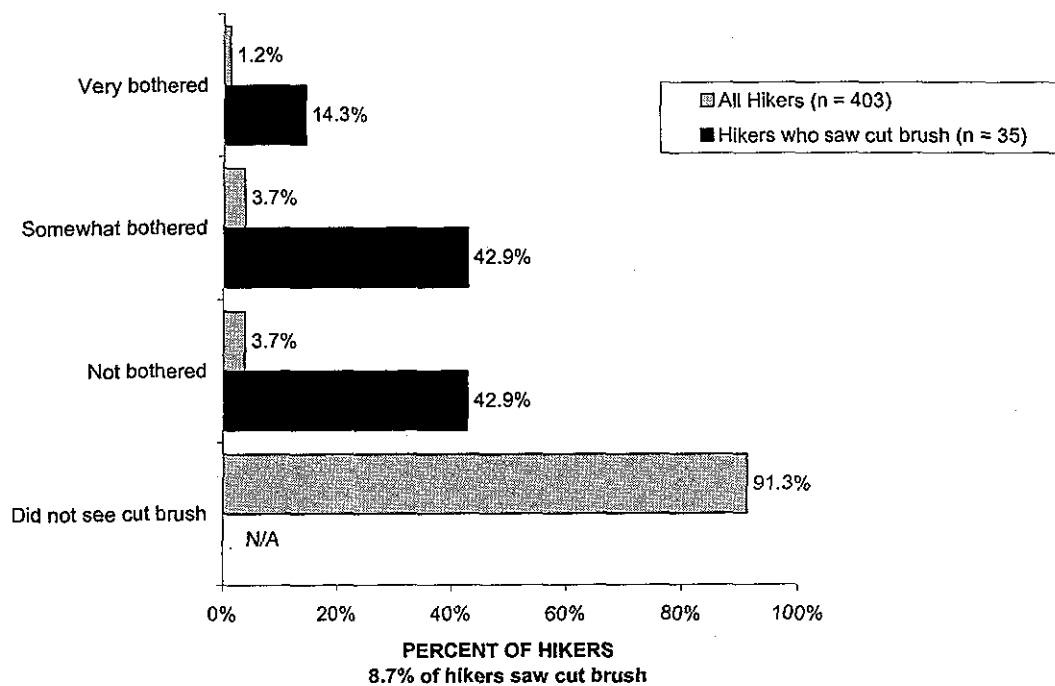
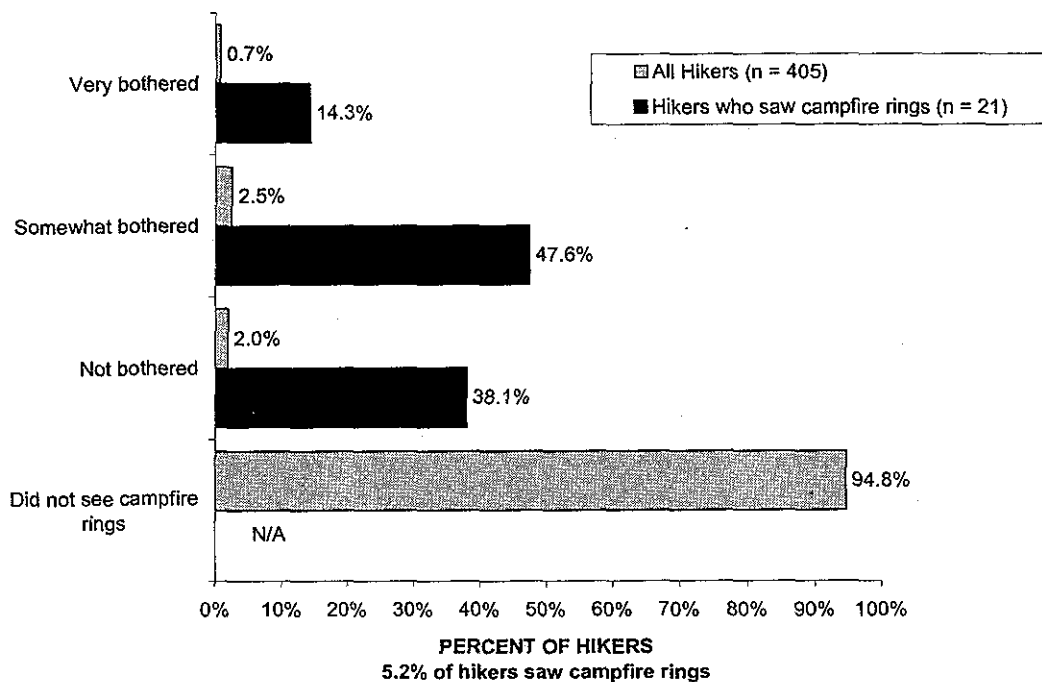


FIGURE 4.26: Mail Survey, Q-14
EXTENT TO WHICH SEEING CAMPFIRE RINGS BOTHERED HIKER



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FIGURE 4.27: Mail Survey, Q-14
EXTENT TO WHICH SEEING TOILET PAPER BOTHERED HIKER

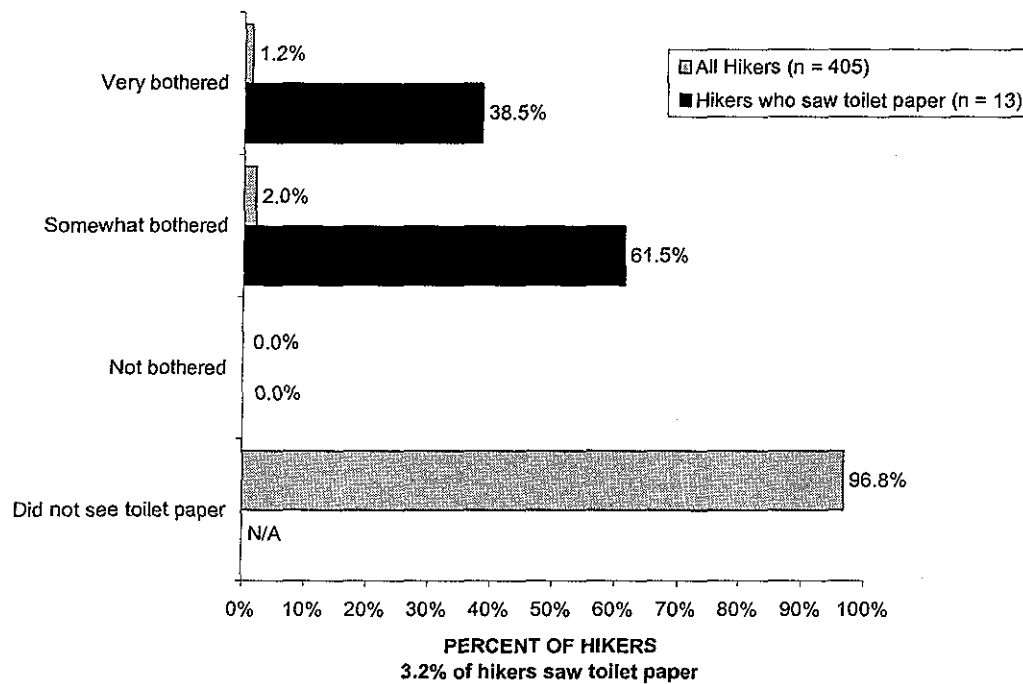
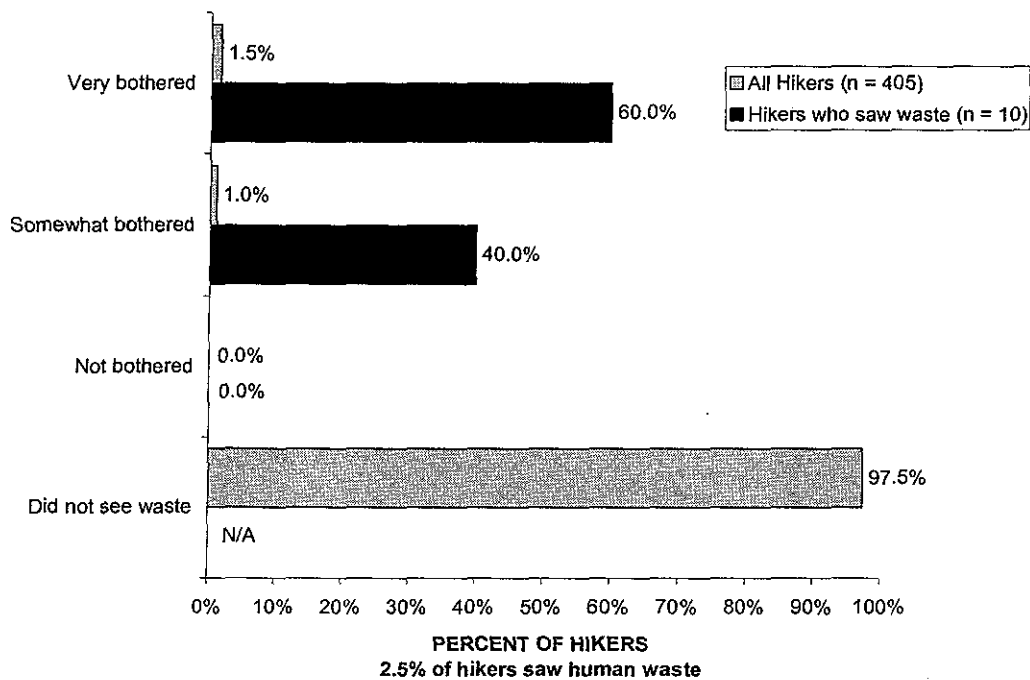


FIGURE 4.28: Mail Survey, Q-14
EXTENT TO WHICH SEEING HUMAN WASTE BOTHERED HIKER



IV. Human Presence

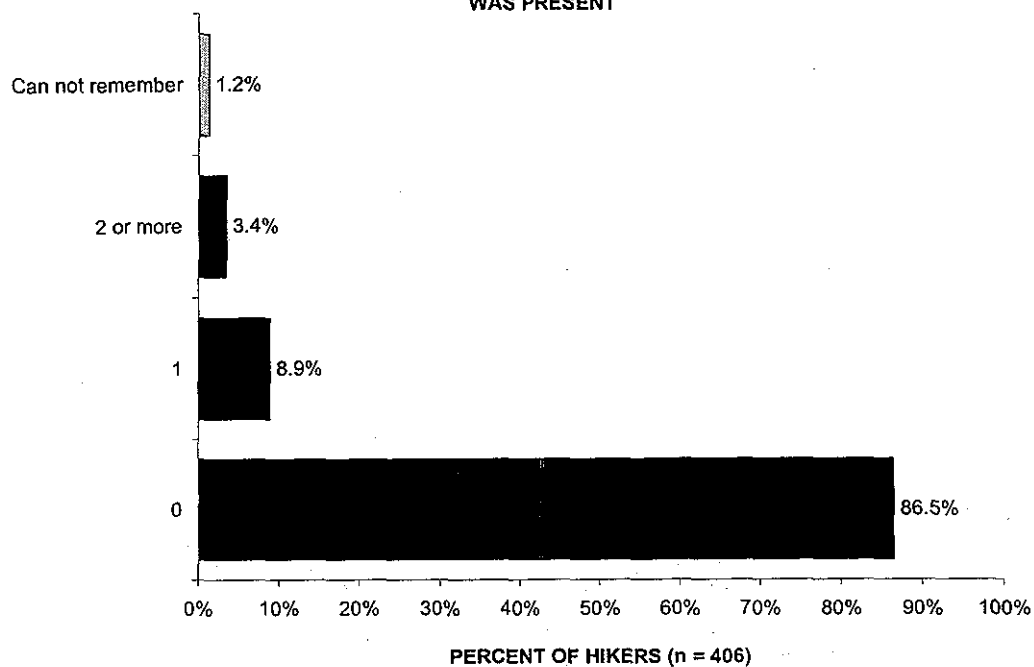
Number of Nights Where Campsite Had Evidence of Prior Human Use

Mail Survey

15. On this overnight backcountry trip, how many nights, if any, did you camp where there was evidence of previous overnight use? (For example, fire ring, soil compaction, vegetation trampling, or moved rocks. Please circle the appropriate number, or circle 'Can't remember'.)

0 1 2 3 4 5 6 7 8 9 10+ (Can't remember)

FIGURE 4.29: Mail Survey, Q-15
NUMBER OF NIGHTS HIKER CAMPED WHERE EVIDENCE OF PREVIOUS OVERNIGHT USE
WAS PRESENT



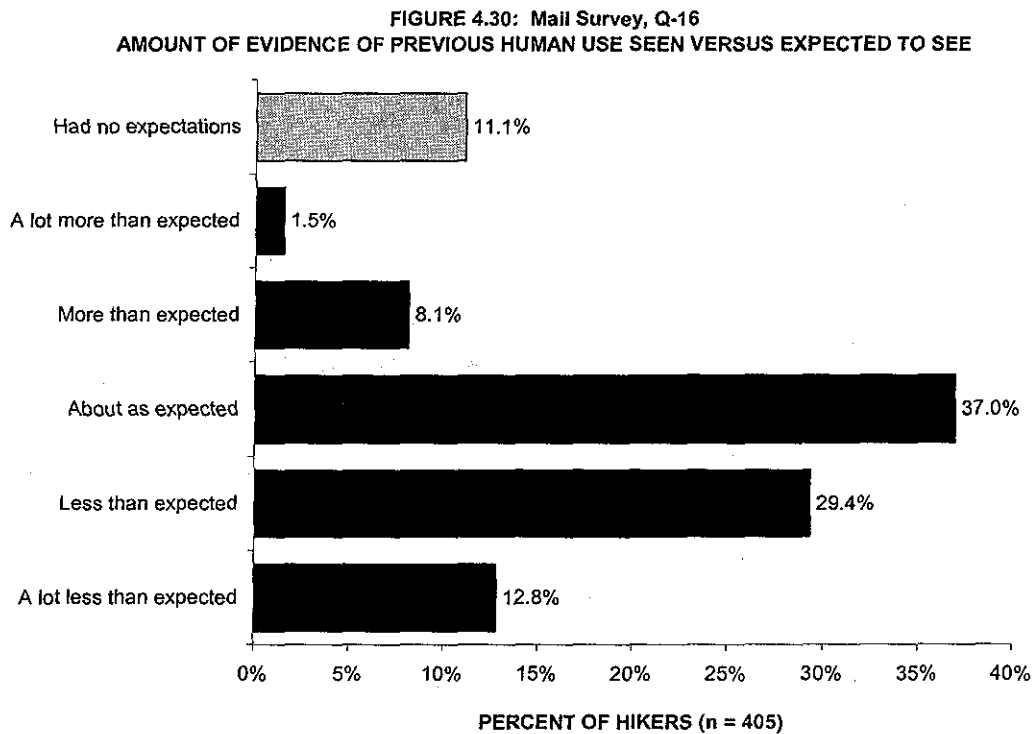
IV. Human Presence

Actual Compared to Expected Amount of Evidence of Human Use

Mail Survey

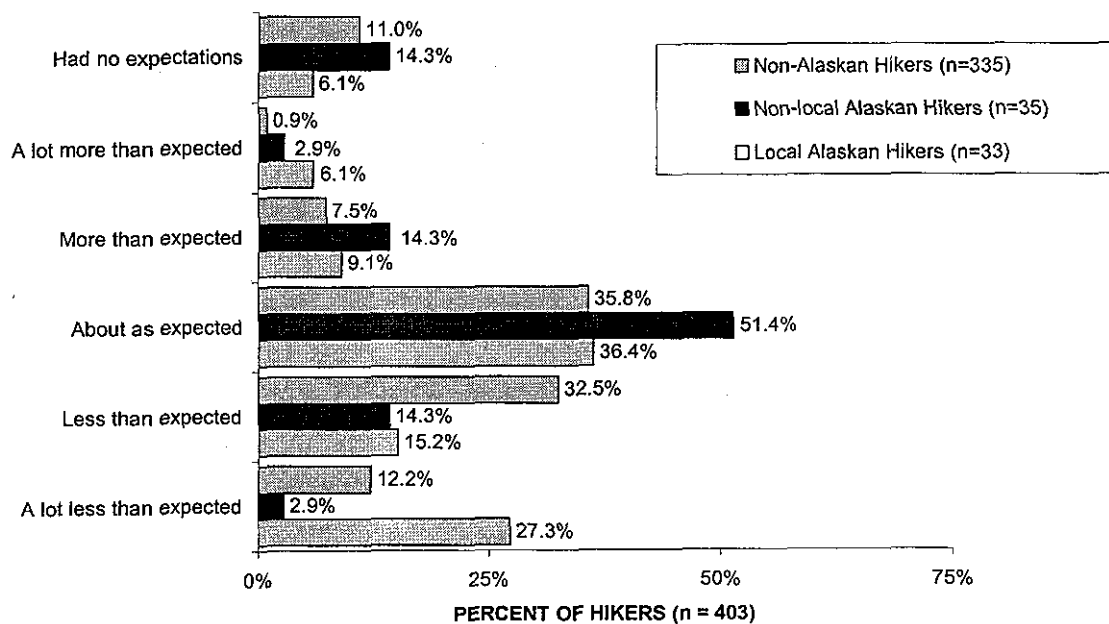
16. How did the amount of evidence of human use you saw during this overnight backcountry trip compare with what you thought you would see? *(Please circle one number even if you did not see any evidence of human use.)*

- 1 A LOT MORE THAN EXPECTED
- 2 MORE THAN EXPECTED
- 3 ABOUT AS EXPECTED
- 4 LESS THAN EXPECTED
- 5 A LOT LESS THAN EXPECTED
- 6 HAD NO EXPECTATIONS ABOUT THE AMOUNT OF EVIDENCE THAT WOULD BE SEEN



IV. Human Presence

FIGURE 4.31: Mail Survey, Q-16
AMOUNT OF EVIDENCE OF HUMAN USE SEEN VERSUS EXPECTED TO SEE BY RESIDENCE



IV. Human Presence

Crowding

Mail Survey

17a. To what extent did you feel "crowded" during this backcountry trip? (Circle one number.)

Not at all <u>Crowded</u>	<u>Slightly</u> <u>Crowded</u>	<u>Moderately</u> <u>Crowded</u>	<u>Extremely</u> <u>Crowded</u>
1	2 3	4 5	6 7

↓
**GO TO
QUESTION 18**

→ 17b. IF YOU FELT CROWDED AT ALL (CIRCLED EITHER 2, 3, 4, 5, 6, OR 7), which of the following factors contributed to your feeling crowded? (Please circle one response for each factor.)

	<u>Did not contribute</u>	<u>Somewhat contributed</u>	<u>Greatly contributed</u>	<u>Don't know/ remember</u>
Number of hiking parties (all types) seen	1	2 3	4 5	DK/R
Number of day hiking parties seen.....	1	2 3	4 5	DK/R
Number of parties camped in sight/sound	1	2 3	4 5	DK/R
Amount of evidence of human use seen...	1	2 3	4 5	DK/R
Type of evidence of human use seen.....	1	2 3	4 5	DK/R
Other: (Specify: _____)	1	2 3	4 5	DK/R

IV. Human Presence

FIGURE 4.32: Mail Survey, Q-17
EXTENT TO WHICH HIKERS FELT CROWDED IN THE BACKCOUNTRY

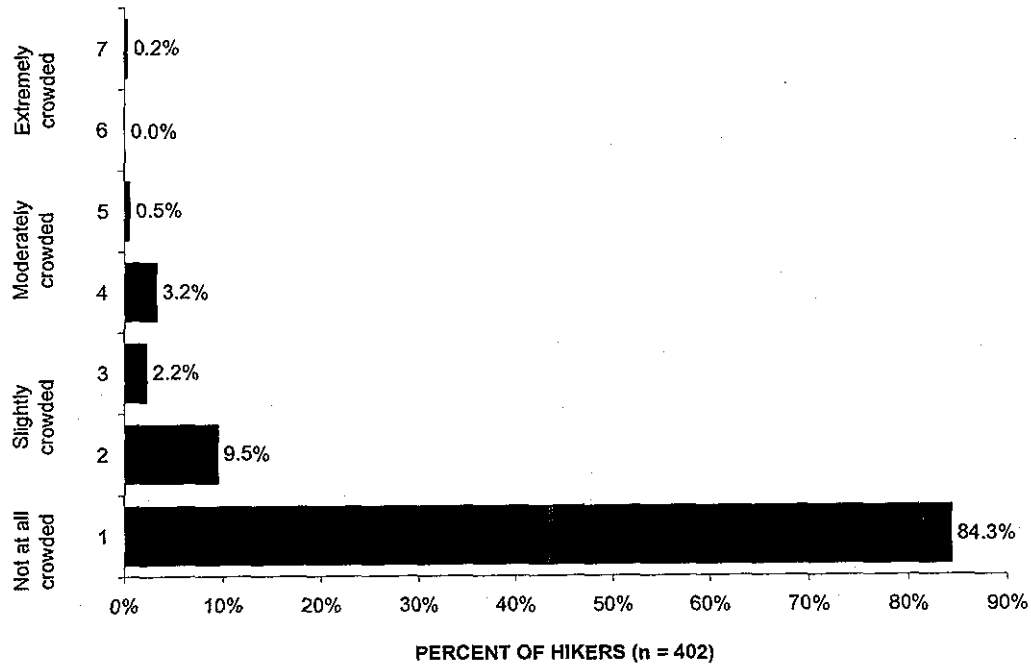
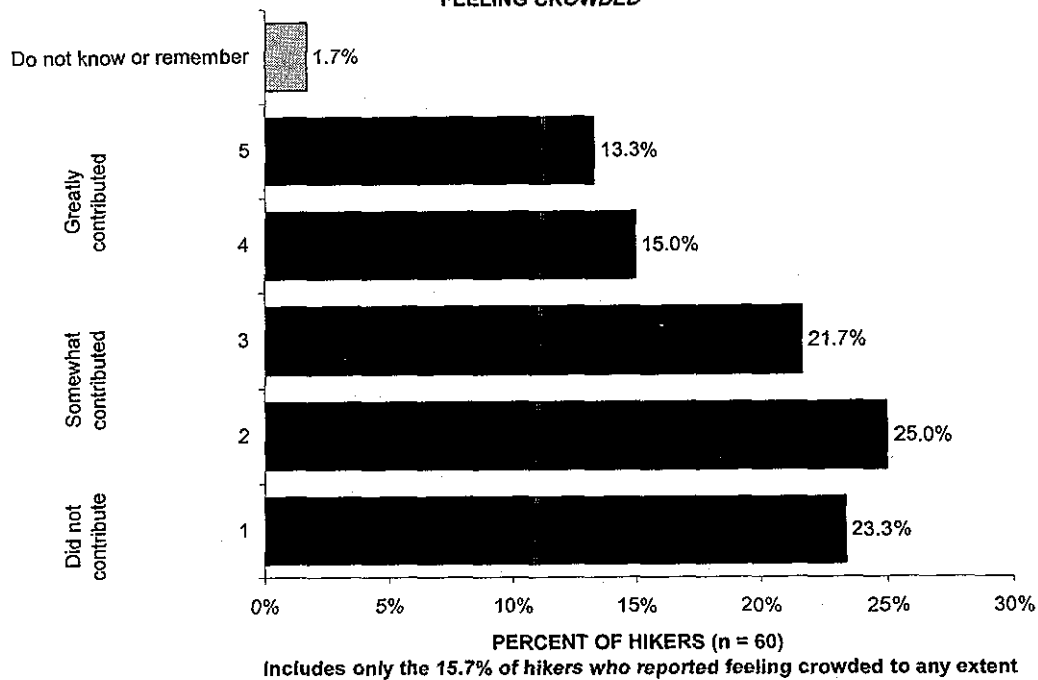


FIGURE 4.33: Mail Survey, Q-17
EXTENT TO WHICH NUMBER OF ALL HIKING PARTIES SEEN BY HIKER CONTRIBUTED TO FEELING CROWDED



IV. Human Presence

FIGURE 4.34: Mail Survey, Q-17
EXTENT TO WHICH NUMBER OF DAY HIKING PARTIES SEEN BY HIKER CONTRIBUTED TO
FEELING CROWDED

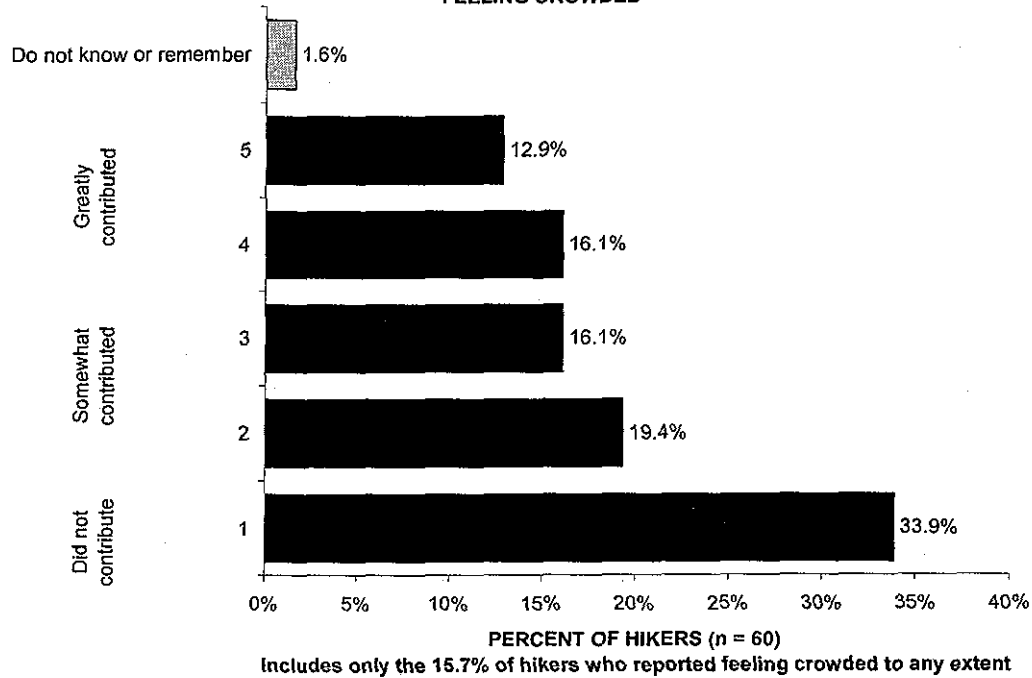
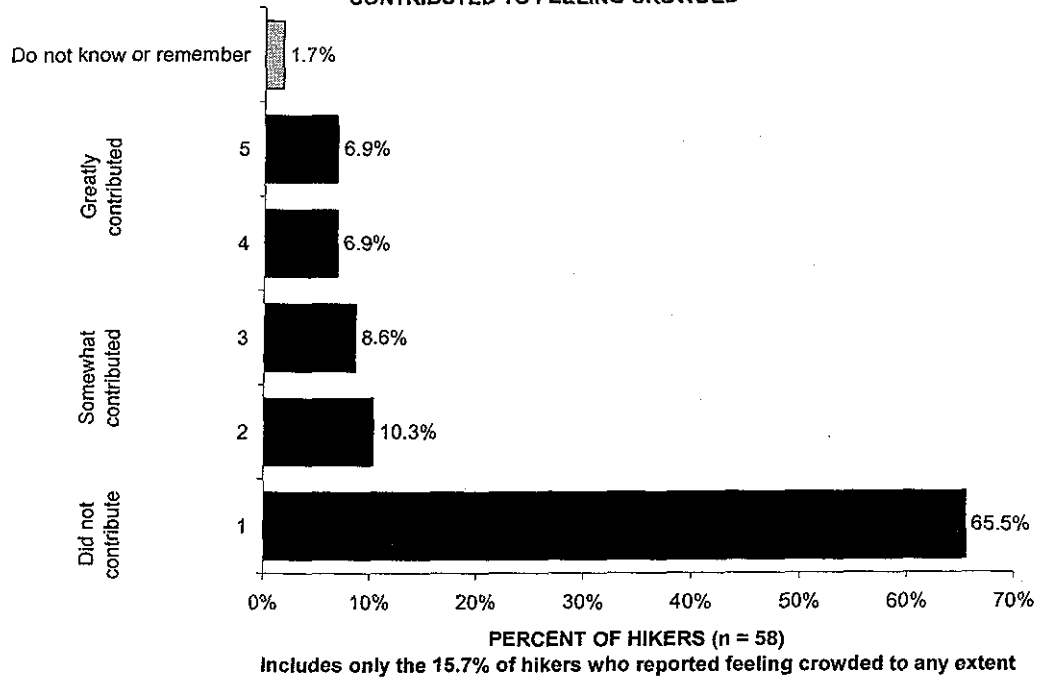
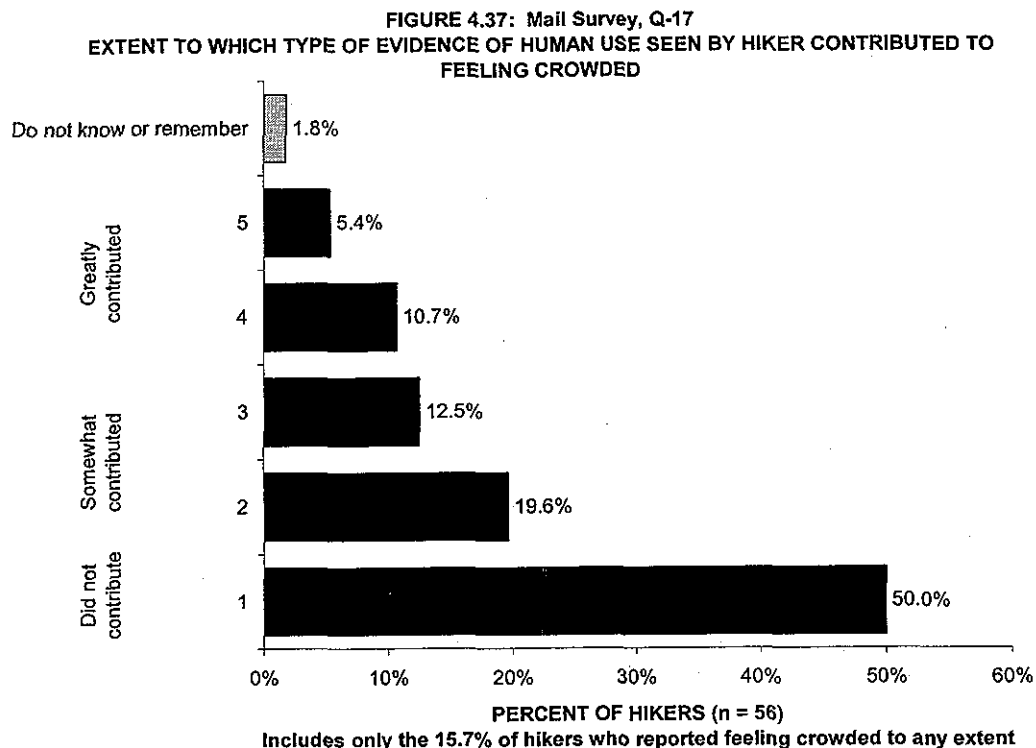
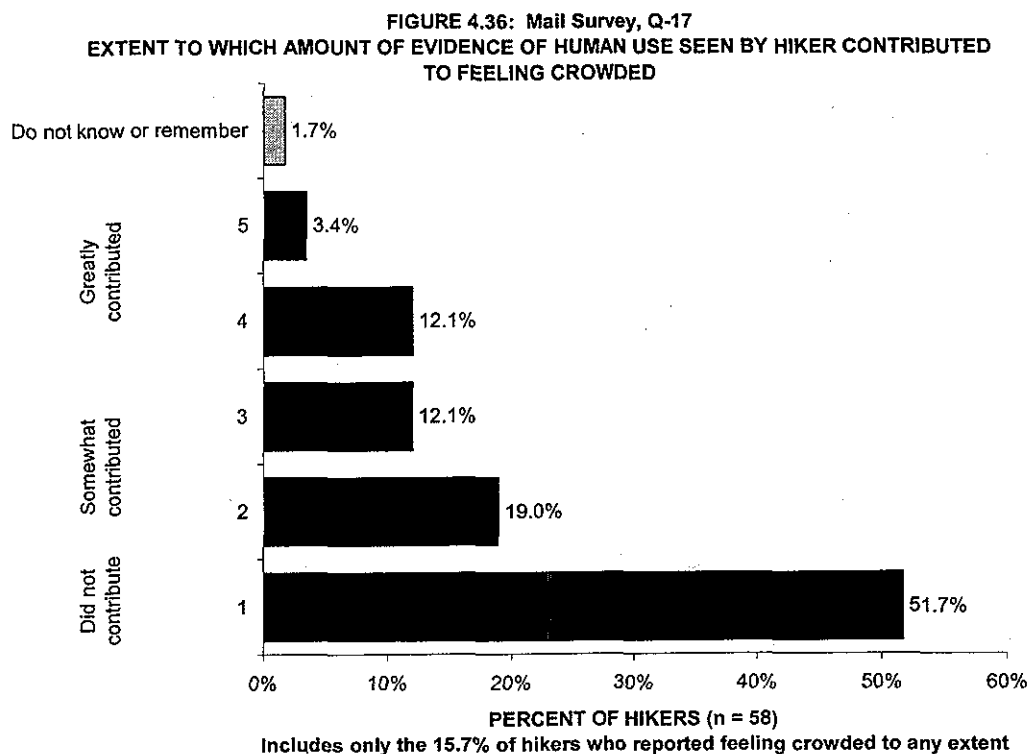


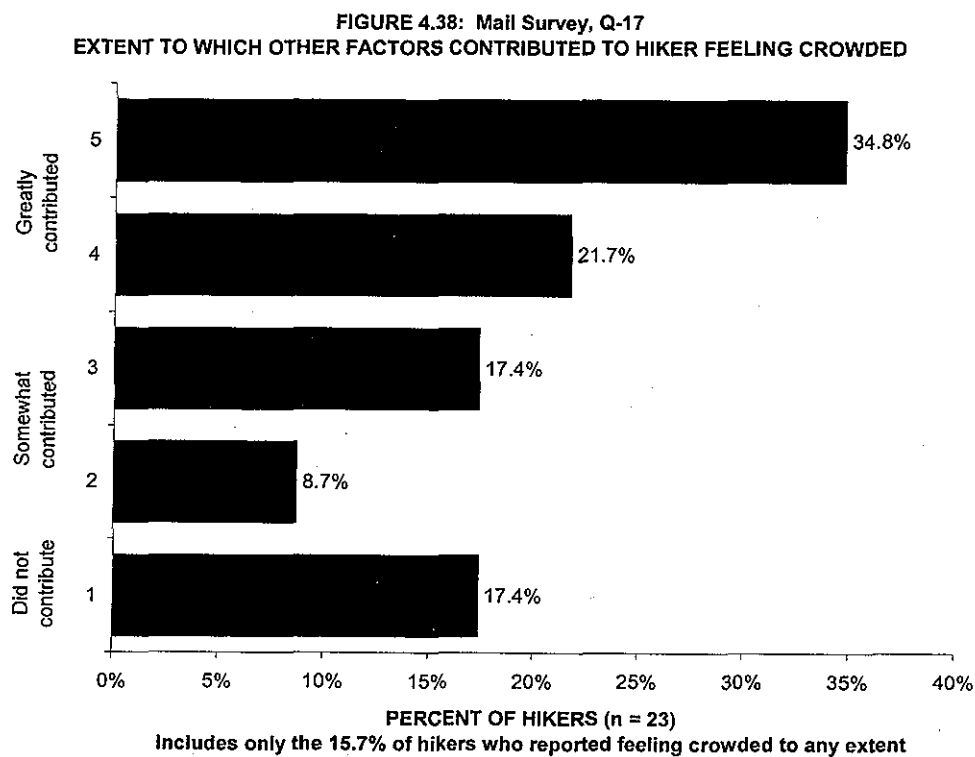
FIGURE 4.35: Mail Survey, Q-17
EXTENT TO WHICH NUMBER OF PARTIES CAMPED WITHIN SIGHT OR SOUND OF HIKER
CONTRIBUTED TO FEELING CROWDED



IV. Human Presence



IV. Human Presence



V. Aircraft Encounters and Evaluations

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University of Washington

Aircraft are an element of the DENA Wilderness experience that has recently drawn increased management attention. The NPS as a whole has recognized natural soundscapes (i.e., the absence of anthropogenic sound) as resources they are mandated to protect. Although aircraft have a legal status in Alaskan parks that is different from their status in parks in other states, visitor comments and the observations of DENA staff have motivated this project's attempt to gather information about the encounters with aircraft that backpackers experience.

Backpackers representing hiking parties were asked a variety of questions about aircraft in the pre-trip and post-trip interviews as well as in one version of the diary. This chapter reports the basic findings from these questions as well as more complex analyses that examine 1) the effect of information about aircraft on backpackers' reactions to aircraft and 2) the effect of encounters with aircraft on backpackers' trip experience.

The Aircraft Information Experiment

One purpose of this project was to examine whether being informed about aircraft flying over Denali affects reactions to the aircraft and, in particular, reduces negative reactions. During the pre-trip interview, approximately half of the respondents representing hiking parties were asked about their knowledge of aircraft flying over Denali, whether the possibility of experiencing aircraft overflights affected the planning of their trip, and their expectations and preferences regarding hearing or seeing aircraft. They were then informed that aircraft fly over Denali and shown a map of common routes followed by flight-seeing aircraft. These respondents were also asked to report on their experiences with aircraft in their diaries. No mention of aircraft was made to the other half of the respondents -- they received no information, answered no questions during the pre-trip interview, and were not asked to report on experiences with aircraft in their

V. Aircraft Encounters and Evaluations

diaries. During the post-hike interview, all respondents were asked the same set of questions assessing their experiences with aircraft.

Responses to each question on the post-hike interview were examined for differences due to exposure to information about aircraft in the pre-hike interview. As in earlier chapters, responses to other questions related to aircraft were examined for the effects of respondents' residence (local employees, AK resident, and non-local).

Chapter Overview

The chapter begins with a condensed presentation summarizing the results of the survey and their implications. The next three sections generally focus on the results of: 1) the pre-trip interview, 2) the diary, and 3) the post-trip interview, including the results of the Aircraft Information Experiment. These sections are titled: 1) *Thoughts About Aircraft That Backpackers Bring To Their Trips*, 2) *Encounters With Aircraft During Backpackers' Trips*, and 3) *Backpackers' Reactions to Aircraft: An Experiment in Providing Information*. The chapter ends with a section that integrates the results of the three survey instruments through statistical analysis. It is titled *How Encounters With Aircraft Affect Backpackers' Trip Experiences*.

A Limitation for the Generalizability of the Sample

The respondents providing the data reported in this chapter were selected to represent all hiking parties. One individual was sampled from the members of the hiking party who interacted with DENA staff at the backcountry desk. It is reasonable to assume that the descriptive observations made by these respondents (e.g., the number of aircraft they heard/saw) represent the conditions experienced by their hiking party. However, it is possible that their reactions to aircraft do not accurately represent the reactions of all hikers in their party (see Introduction, pages 4 & 13-14). Analyses showed that the Mail Survey data for this sample did not differ from the rest of the sample representing all backpackers suggesting that the reactions to aircraft reported by this sample should likewise be unbiased. Strictly speaking, the extent (if at all) to which their reactions might differ from hiking parties in general can not be determined from these data. Therefore,

V. Aircraft Encounters and Evaluations

throughout this chapter data are reported as representing *backpackers selected to represent hiking parties*. Readers should note this limitation.

V. Aircraft Encounters and Evaluations

V. Aircraft Encounters and Evaluations

Highlights and Implications

Because of the complexity of the survey (i.e., multiple instruments with some repeated questions completed by different samples) many of the major questions of interest concerning aircraft are not answered by a single numerical estimate. Nonetheless, substantive conclusions can be supported based on the multiple estimates that the survey provided.

Thoughts About Aircraft That Backpackers Bring To Their Trips

Most backpacking parties were not surprised to hear aircraft. About three-quarters of all backpackers selected to represent hiking parties (and 70 percent of the non-Alaskans) know that aircraft are sometimes heard or seen flying over DENA, (see Figures 5.1 and 5.2). Only about 22 percent expect that they will not hear or see aircraft (see Figure 5.5). This suggests that information campaigns will have a limited effect on the overall awareness that aircraft are present in DENA.

Most backpackers selected to represent hiking parties preferred to hear/see no aircraft. About three-quarters of all respondents said "0" when asked how many times they would prefer to hear aircraft on a typical trip day (see Figure 5.8). Less than ten percent specified that they preferred to hear/see two or more aircraft.

Almost none of the backpackers selected to represent hiking parties planned their trips around aircraft. Although 22 percent of respondents (57 of 263) said they considered the possibility of encountering aircraft when planning their trip, only 4 of 263 respondents said that aircraft affected their trip planning (see Figures 5.9 and 5.11). This finding may seem contradictory with the prior conclusion that backpackers prefer to see no aircraft. Together the findings suggest that trips are motivated primarily by factors other than getting away from aircraft, but that aircraft can still detract from trip enjoyment.

Encounters With Aircraft During Backpackers' Trips

Flight-seeing aircraft are a common feature of hikes in DENA. Analyses combining propeller planes and helicopters (i.e., aircraft used for flight-seeing) show that 58 percent of all backpacker parties hear/see these types of aircraft at some time during

V. Aircraft Encounters and Evaluations

their trip, and 28 percent hear/see them every trip day (see Figure 5.13). These figures include backpacking parties whose trips took place in poor weather when flight-seeing did not take place and those who took trips in zones rarely overflown by aircraft. Thus, for some sub-groups of DENA backpacking parties these figures underestimate the percentage who hear/see flight-seeing aircraft.

Most aircraft encounters were not extremely loud. About two-thirds of backpacking parties who encountered aircraft reported no aircraft sounds louder than a "Background noise where you could still talk in a normal voice" (see Appendix K). Although the noise scale used in the survey was relatively crude, later analyses nonetheless showed that sound was a strong predictor of negative impact due to aircraft encounters. Thus, future research focused on more detailed investigation of aircraft sound might help guide mitigation efforts and park policy related to aircraft.

Backpackers Reactions to Aircraft

Knowledge of aircraft prior to the trip had a significant influence on respondents' reactions to the aircraft they encounter – it made negative reactions more likely. Figure 5.22 and 5.23 show that although information about aircraft was expected to make aircraft encounters more acceptable to backpacking parties it had the opposite effect. The Aircraft Information Experiment showed that whether backpackers selected to represent hiking parties learned about aircraft from the survey workers or from other sources, about 60 percent of those who knew about overflights reported that they were annoyed, compared to 40 percent for those who did not know about aircraft prior to the trip. Possible interpretations of this finding are presented later in the chapter, but it is clear that simply telling hikers that they can expect to hear/see aircraft did not improve their hiking experience.

Between 50 and 60 percent of all backpackers selected to represent hiking parties reported some annoyance with aircraft, and about 45 percent reported that aircraft detracted from their experience. Care should be taken when interpreting these estimates of annoyance and detraction because they aggregate across trips in different weather and across the experimental and control conditions. For example, 28 percent of backpackers saw no flight-seeing aircraft during their trips (probably because of poor weather that

V. Aircraft Encounters and Evaluations

precluded flying), and Figure 5.26 shows that only 38 percent of respondents who were not given information about aircraft and did not know about aircraft from other sources reported that they were annoyed. It is likely that these estimates underestimate some groups' annoyance and detraction while overestimating it in other groups.

Experiences with aircraft will not alter the plans for future visits to DENA made by backpackers selected to represent hiking parties. Only about 10 percent of respondents said that aircraft would affect their future visits to DENA (see Figure 5.28). Even at this level, systematic displacement over time might affect the characteristics of backpackers or backpacking trips. However, such effects are unlikely -- only 2 of 370 respondents reported that they would stop visiting altogether due to aircraft, while 3 of 370 reported that aircraft made them more likely to return. Caution is necessary in interpreting these results because the question assumed that backpackers would return to DENA when some proportion are unlikely to do so. It is unclear how such backpackers interpreted and filled out the question.

How Encounters With Aircraft Affect Backpacking Parties' Trip Experiences

The loudness of the aircraft encountered by backpackers selected to represent those hiking parties is related to their overall trip satisfaction. Because single-item measures of trip satisfaction are frequently insensitive to manageable aspects of the trip experience, the relationship between the loudness of aircraft encounters and overall trip satisfaction represents an unexpected and potentially important effect. Such a correlation could result from a combination of factors other than a causal relationship in which the noise of aircraft encounters decrease satisfaction. For example, low clouds and poor visibility might cause aircraft to fly lower (increasing noise) while also decreasing the quality of backpackers' experiences. Future research would be necessary to rule out such alternate explanations before concluding that these results indicate that the noise of aircraft encounters decreases backpacker satisfaction.

Regression results (along with the earlier described finding that hikers who knew about aircraft were more likely to report negative effects) suggest that informing people of the presence of aircraft will be ineffective or counterproductive in reducing flight-seeing impact. The regression analyses (see Table 5.3) showed that for backpackers

V. Aircraft Encounters and Evaluations

selected to represent hiking parties, expectations concerning aircraft (alone, or in interaction with aircraft encounter variables) were not predictive of annoyance with aircraft, impacts of aircraft on trip enjoyment, or overall trip satisfaction. Thus, efforts to alter expectations are unlikely to mitigate aircraft impacts.

Regression results suggest that the number of planes, time they are heard, and maximum loudness could all be reduced to limit impact. However, moving planes away from backpacking parties to decrease loudness should decrease impacts most effectively. The regression analyses (see Table 5.3) showed that the average daily maximum loudness rating was: a) the strongest predictor of annoyance with aircraft and overall trip satisfaction, b) as strong a predictor of aircraft impacts on trip enjoyment as any of the other variables, and c) one of the components of every two-way interaction among the predictor variables that approached or exceeded statistical significance. Because it is the strongest predictor of negative aircraft impacts, minimizing the loudness of the aircraft backpackers encounter is the most promising avenue for efforts designed to mitigate negative impacts of aircraft.

V. Aircraft Encounters and Evaluations

Thoughts About Aircraft That Backpackers Bring To Their Trips

Before embarking on their backing trip, respondents (i.e., backpackers selected to represent hiking parties) in the information condition of the Aircraft Information Experiment were asked a series of questions about their knowledge, expectations, preferences, and plans regarding aircraft. The data from these questions are reported in this section.

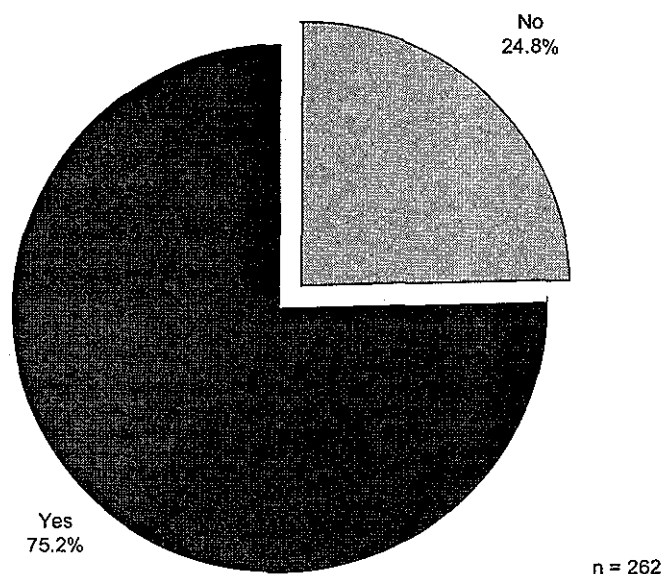
V. Aircraft Encounters and Evaluations

Respondents' Awareness of Aircraft

Pre-trip Interview

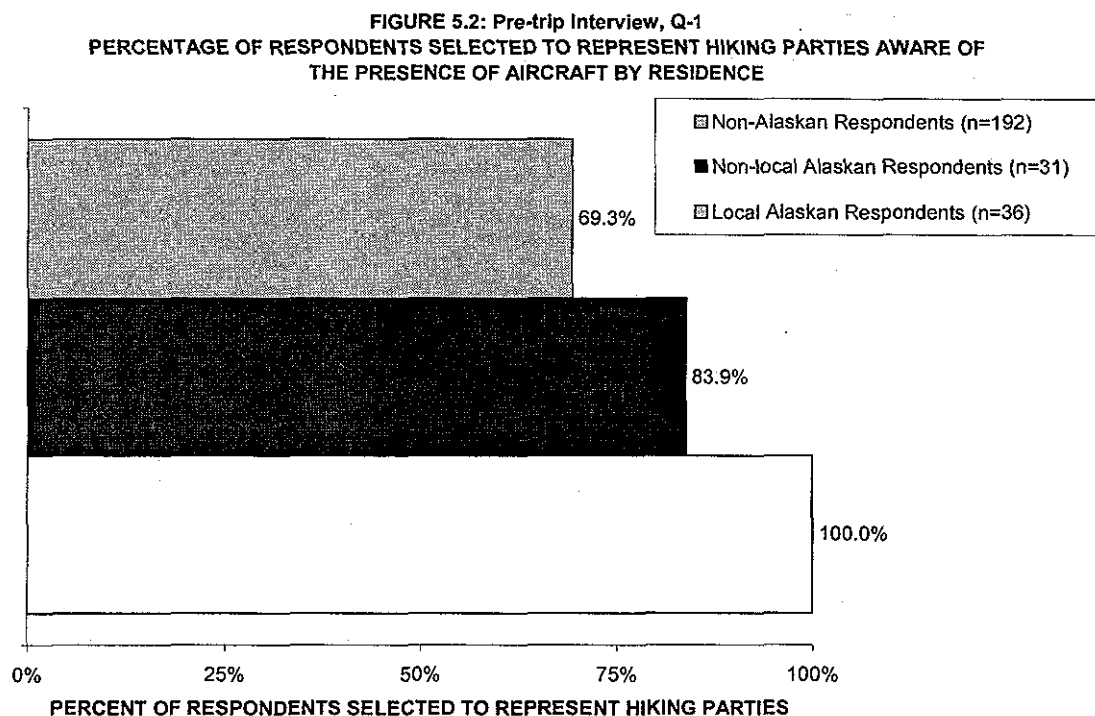
1. Did you know that aircraft are sometimes heard or seen flying over Denali?
- NO
YES → 1.1 How did you learn about the presence of aircraft at Denali? (Check as many as reported. Probe by asking "Any others?" if they stop at one source.)
1. PARK WEB SITE
 2. PRIOR VISITS TO DENALI
 3. GENERAL KNOWLEDGE/ALASKA EXPERIENCE
 4. FRIENDS OR RELATIVES
 5. TRAVEL GUIDE/TOUR BOOK
 6. NEWSPAPER/MAGAZINE
 7. MAPS/BROCHURES
 8. RADIO/TELEVISION
 9. DON'T REMEMBER WHERE
 10. OTHER (Please specify: _____)

FIGURE 5.1: Pre-trip Interview, Q-1
PERCENTAGE OF RESPONDENTS SELECTED TO REPRESENT HIKING PARTIES AWARE OF
THE PRESENCE OF AIRCRAFT



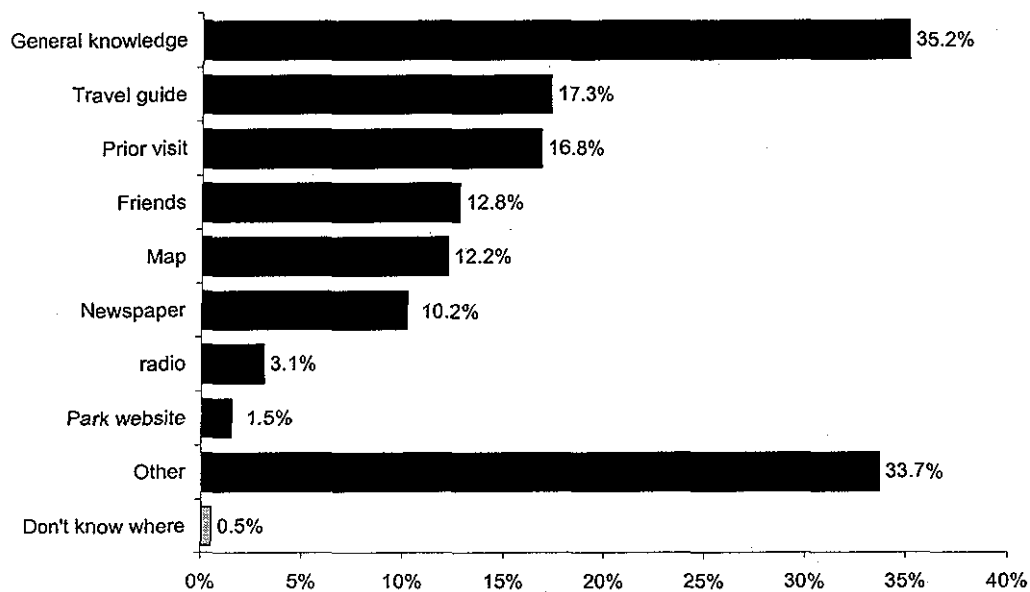
V. Aircraft Encounters and Evaluations

Respondents' awareness of aircraft varied significantly by residence, $\chi^2 (2, n = 259) = 16.78, p < .001$. As can be seen in Figure 5.2, all (100%) of the local Alaskan respondents were aware of aircraft while only 83.9 percent of non-local Alaskan respondents and 69.3 percent of non-Alaskan respondents were aware of aircraft.



V. Aircraft Encounters and Evaluations

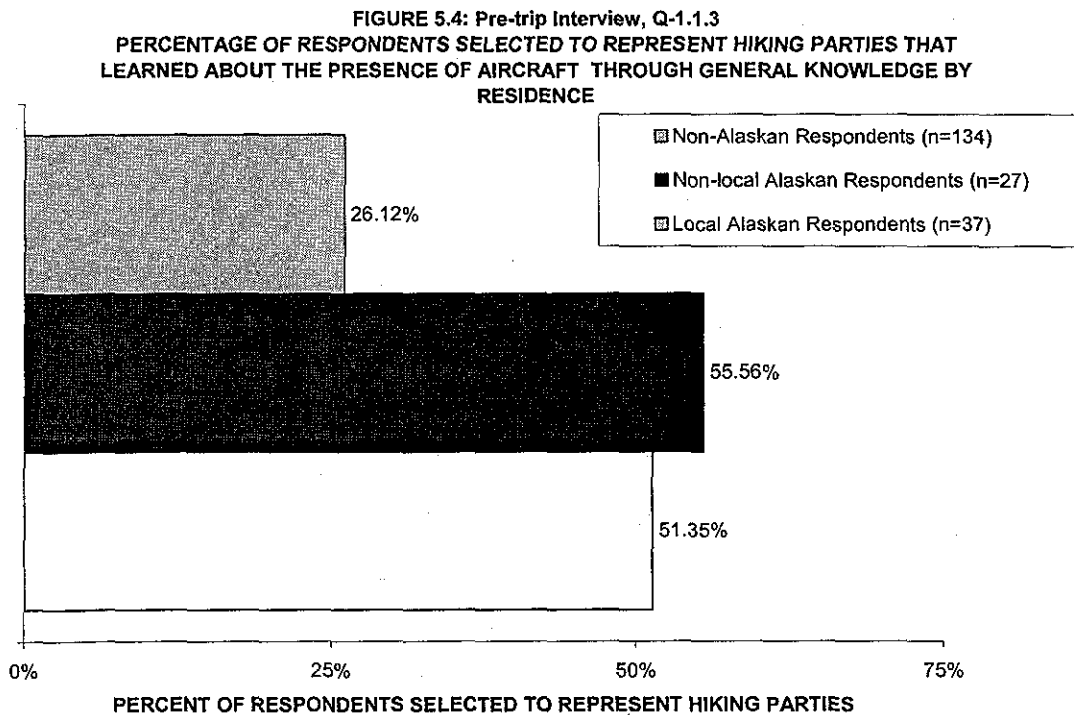
FIGURE 5.3: Pre-trip Interview Q-1.1
HOW RESPONDENTS SELECTED TO REPRESENT HIKING PARTIES LEARNED ABOUT THE PRESENCE OF AIRCRAFT AT DENA



PERCENT OF RESPONDENTS SELECTED TO REPRESENT HIKING PARTIES (n = 196)
Only includes the 75.2% of hiking parties who know that aircraft are heard/seen over DENA.

V. Aircraft Encounters and Evaluations

The percentage of respondents who reported that they were aware of aircraft from general knowledge differed significantly by residence, $\chi^2 (2, n = 198) = 14.03, p = .001$. As can be seen in Figure 5.4, only about one-fourth (26.1%) of non-Alaskan respondents learned about aircraft through general knowledge while about half (55.6% and 51.4%, respectively) of non-local and local Alaskan residents learned about aircraft from general knowledge.



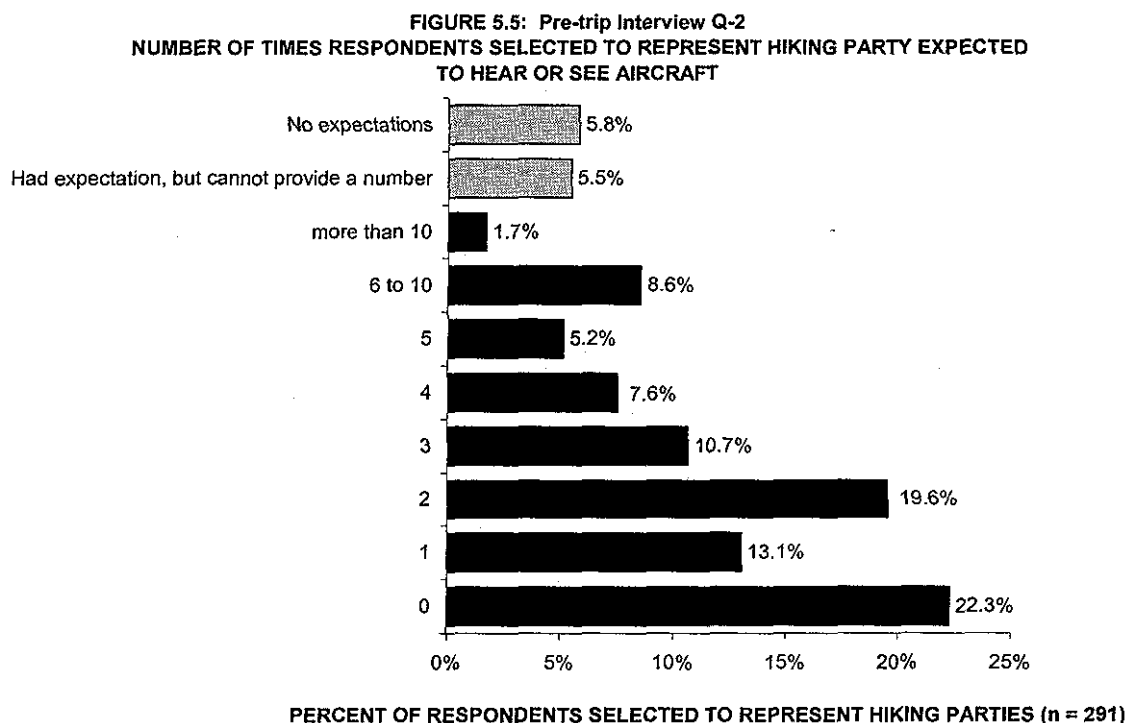
V. Aircraft Encounters and Evaluations

Expected Number of Aircraft Encounters

Pre-trip Interview

2. During a typical day on this trip, how many times do you expect to hear or see aircraft?

NUMBER OF TIMES _____ Record "no expectations" if respondent gives a "couldn't say/don't know" answer and persists after a probe

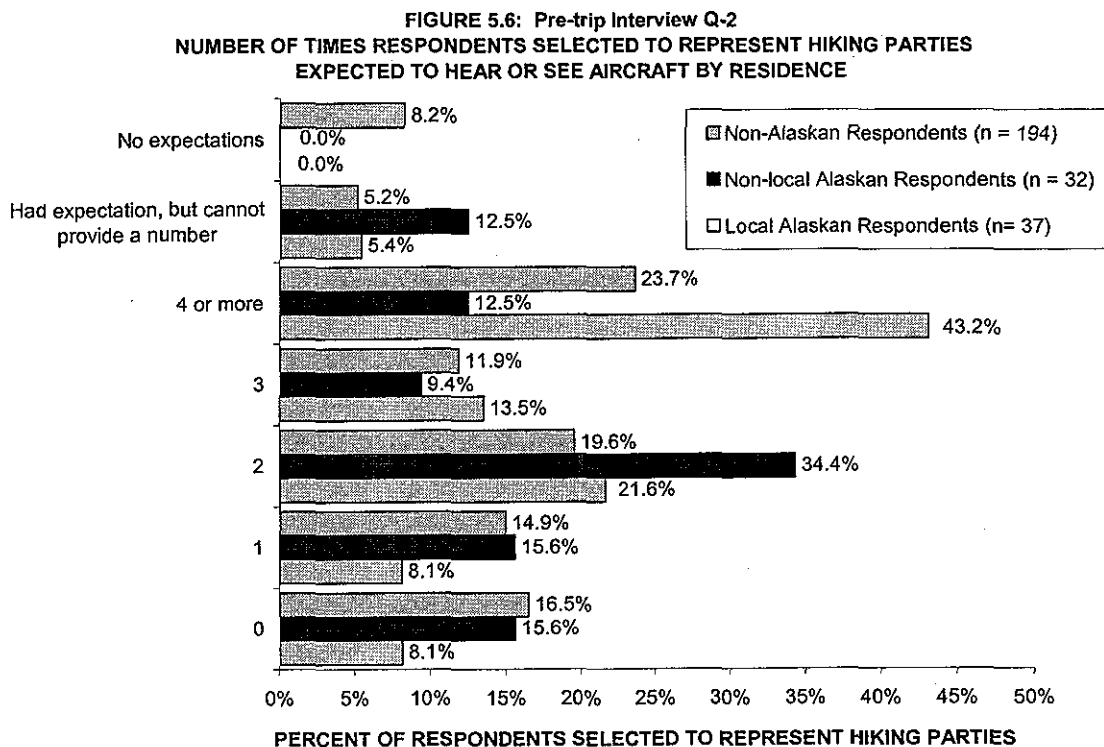


The number of times people expected to hear or see aircraft varied significantly by residence, $\chi^2(10, n = 263) = 19.48, p = .035$ (6 cells had expected frequencies less than 5)². As can be seen in Figure 5.6, local Alaskan respondents were twice as likely to expect

² When cells have expected frequencies less than 5, the chi-square value is inflated and can lead to inappropriate rejection of the null hypothesis. In an effort to eliminate expected frequencies less than 5, an analysis was performed that combined the two nominal categories and another was performed that excluded both the nominal categories. In both cases, the findings were significant and there were cells with expected frequencies less than 5. Although the small cells may inflate the chi-square value, the percentage differences between respondents in the larger cells suggest substantive differences in response patterns.

V. Aircraft Encounters and Evaluations

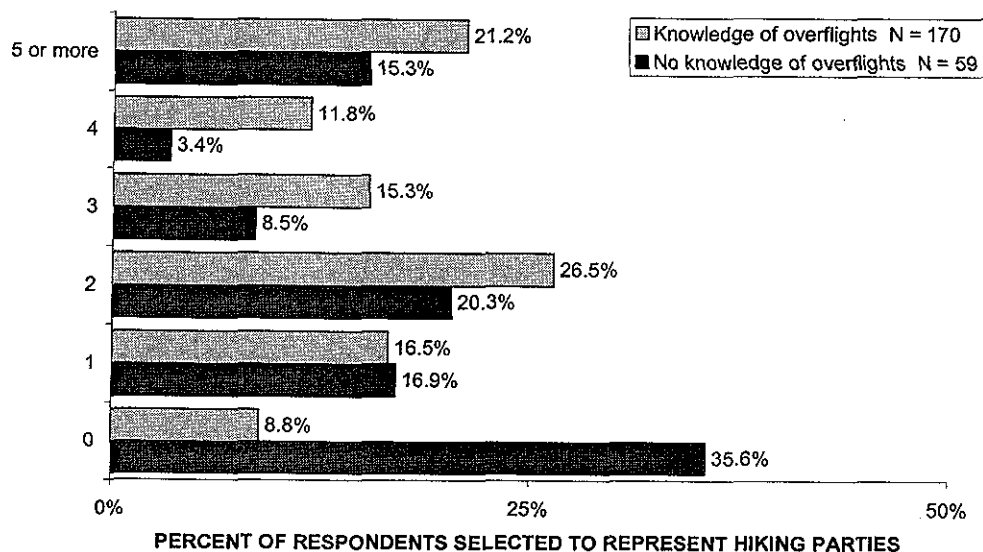
encounters with 4 or more aircraft and only half as likely to expect to encounter none or one aircraft compared to non-local Alaskan respondents or non-Alaskan respondents. No local or non-local Alaskan respondents reported that they had no expectations while 8.2 percent of non-Alaskan respondents had no expectations.



V. Aircraft Encounters and Evaluations

It was predicted that individuals who were informed about aircraft would have expectations of seeing aircraft. Consistent with this hypothesis, expectations of number of aircraft that would be seen depended on initial level of knowledge about aircraft, $\chi^2(5) = 26.12, p < .001$ (see Figure 5.7). Respondents who reported knowing about aircraft before this trip were less likely to expect seeing no aircraft (8.8%) than respondents in the information condition who did not know about aircraft (35.6%). Additionally, respondents who knew about aircraft before this trip were more likely to expect seeing three or more aircraft (48.3%) than respondents who did not know about aircraft (27.2%)

FIGURE 5.7: Pre-Hike Interview Q-1
EXPECTED NUMBER OF AIRCRAFT OVERFLIGHTS BY KNOWLEDGE OF AIRCRAFT
OVERFLIGHTS OVER DENALI



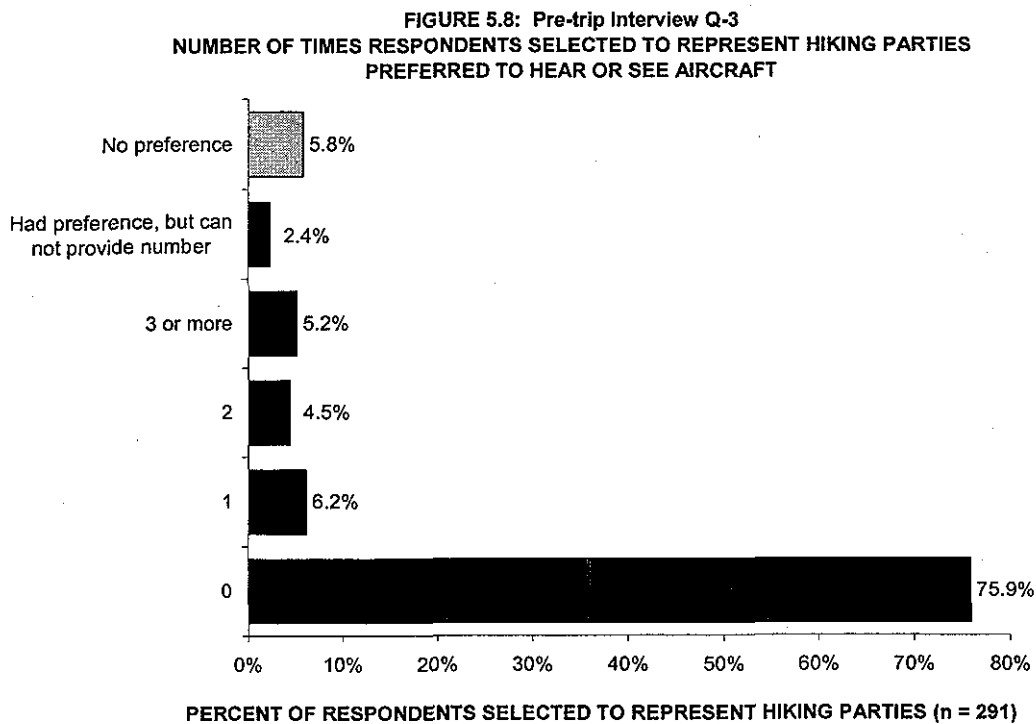
V. Aircraft Encounters and Evaluations

Preferred Number of Aircraft Encounters

Pre-trip Interview

3. During a typical day on this trip, how many times would you prefer to hear or see aircraft?

NUMBER OF TIMES _____ If respondent can't provide a number, ask for differentiation between a "no preferences/don't care" answer and a "have a preference but can't provide a number answer."



V. Aircraft Encounters and Evaluations

Considered the Possibility of Seeing Aircraft when Planning Trip

Pre-trip Interview

4. **When you planned this visit to Denali, did you take into consideration the possibility that you might hear or see aircraft flying over the area?**

NO

YES → 4.1 **Did the possibility of encountering aircraft affect any aspect of how you planned your visit to Denali?**

NO

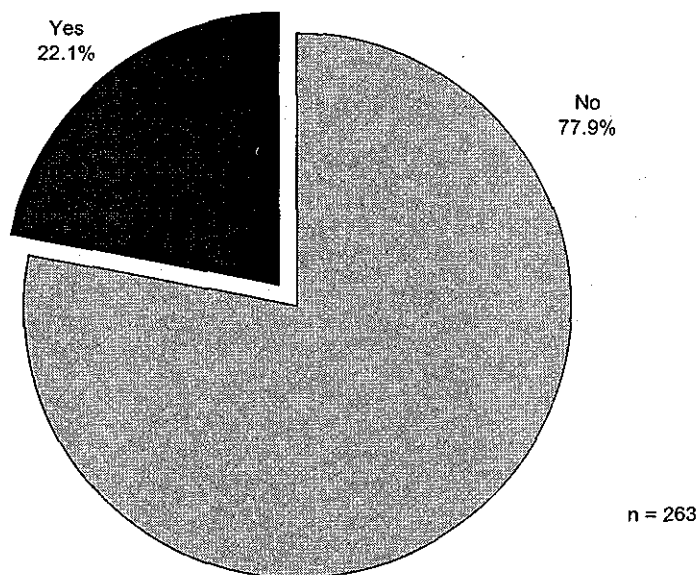
YES → 4.2 **How did the possibility of encountering aircraft affect your decision to visit Denali?**

(Check as many as respondent reports. Probe by asking "Any others?" if they stop at one effect.)

1. Came to see the aircraft?
2. Came at a different time of day than would otherwise?
3. Came on a different day of the week?
4. Planned to do different activities in Denali?
5. Planned to visit a different area of Denali?
6. Other effects not described *(Please specify below.)*
7. Don't know

V. Aircraft Encounters and Evaluations

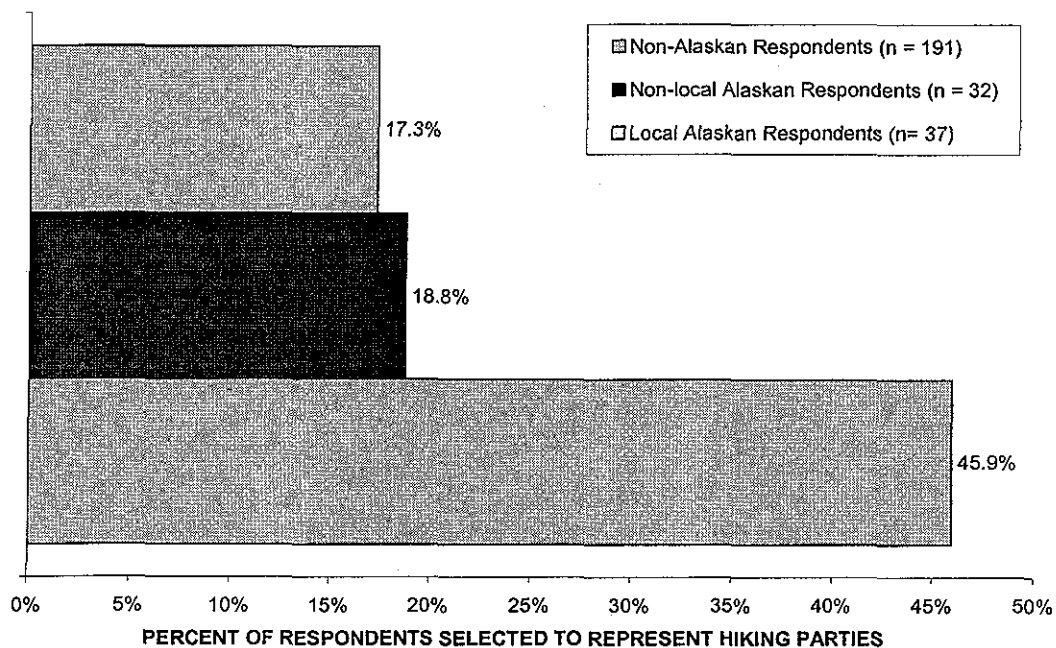
FIGURE 5.9: Pre-trip Interview, Q-4
PERCENTAGE OF RESPONDENTS SELECTED TO REPRESENT HIKING PARTIES THAT TOOK
POSSIBILITY OF ENCOUNTERING AIRCRAFT INTO CONSIDERATION



Consideration of the possibility of encountering aircraft varied significantly by residence, $\chi^2 (2, n = 260) = 15.24, p < .001$ (see Figure 5.10). About twice as many local Alaskan respondents (45.9%) considered encountering aircraft when planning their trip than did non-local Alaskan respondents (18.8%) or non-Alaskan respondents (17.3%).

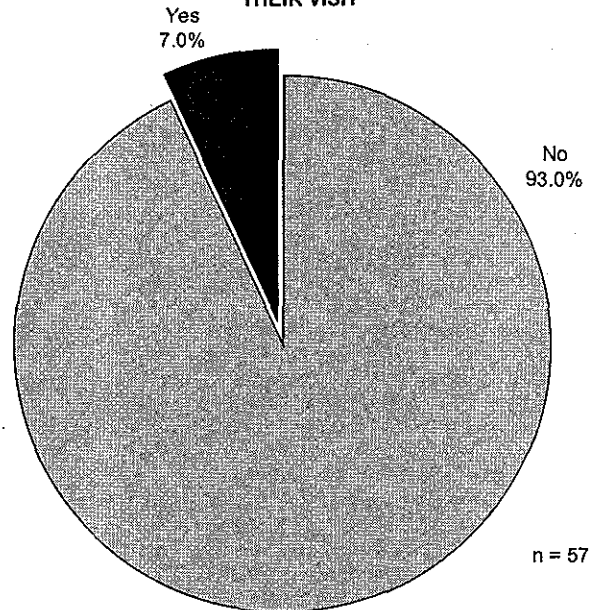
V. Aircraft Encounters and Evaluations

FIGURE 5.10: Pre-trip Interview Q-4
PERCENTAGE OF RESPONDENTS SELECTED TO REPRESENT HIKING PARTIES THAT
TOOK POSSIBILITY OF ENCOUNTERING AIRCRAFT INTO CONSIDERATION BY RESIDENCE



V. Aircraft Encounters and Evaluations

FIGURE 5.11: Pre-trip Interview, Q-4.1
PERCENTAGE OF RESPONDENTS SELECTED TO REPRESENT HIKING PARTIES WHO
REPORTED THAT POSSIBILITY OF SEEING AIRCRAFT AFFECTED HOW THEY PLANNED
THEIR VISIT



Includes only the 22.1% of hiking parties who when planning this visit, considered that they might hear/see aircraft in Denali.

Note that the seven percent section of the pie in Figure 5.11 represents only four backpackers selected to represent hiking parties, or 1.5 percent of the full sample. Of those four respondents, three said that they planned to visit a different area of DENA, one planned to do different activities, and one changed plans in an unspecified way (one respondent changed both the visited area and activity they planned).

V. Aircraft Encounters and Evaluations

Encounters With Aircraft During Backpackers' Trips

Two questions filled out daily in Version 1 of the trip diary asked backpacking parties to report the number of aircraft they heard or saw (each question is reproduced below). The first question asked about aircraft in general, whereas the second question³ asked specifically about the number of propeller planes, helicopters, jets, and other aircraft⁴. Because data were collected on a daily basis and then aggregated to represent each backpacking party's trip, up to six summary figures represent the data from each question or sub-question in the diary:

- The *Average per Trip Day* represents the total number of aircraft (of a particular type) reported during a trip divided by the number of trip days. Because partial hiking days could be recorded on the first and/or last day of the diary, the presented averages are low estimates of aircraft encounters per full hiking day.
- The *Maximum Daily Number per Trip* represents the number of aircraft (of a particular type) reported on the day when the most aircraft (of that type) were heard or seen. For example, if a party on a three-day hiking trip reported seeing 4, 0, and 2 propeller planes, the Maximum Daily Number of Propeller Planes would be 4.
- The *Minimum Daily Number per Trip* is calculated in the same manner as the Maximum Daily Number, except that it represents the trip day when the fewest aircraft (of a particular type) were heard or seen (i.e., in the example, the Minimum Daily Number of Propeller Planes would be 0).
- The *Standard Deviation per Trip Day* represents the variability in the daily number of aircraft (of a particular type) reported across the days of each trip. The standard deviation is the conventional way of describing how much a group of scores (in this case, aircraft encounters reported across multiple trip days) vary around the mean of that group (in this case, the Average per Trip Day).

³ These two questions were not contiguous in the diary but are reported together in this chapter to improve the logical flow of the information.

⁴ The "Other Aircraft" category was almost always used for aircraft that were not specifically classified as prop planes, helicopters, or jets.

V. Aircraft Encounters and Evaluations

- The *Total Number per Trip* is simply the total number of aircraft (of a particular type) reported during a trip.
- The *Percentage of Trip Days that Respondents Saw/Heard Aircraft* represents the number of trip days for which the total number of aircraft (of a particular type) reported was more than zero divided by the total number of trip days.

All the summary figures can be found in Appendix J. In this chapter only the subset of the summary figures used in later regression analyses or considered most descriptive of hiking parties' experiences are reported.

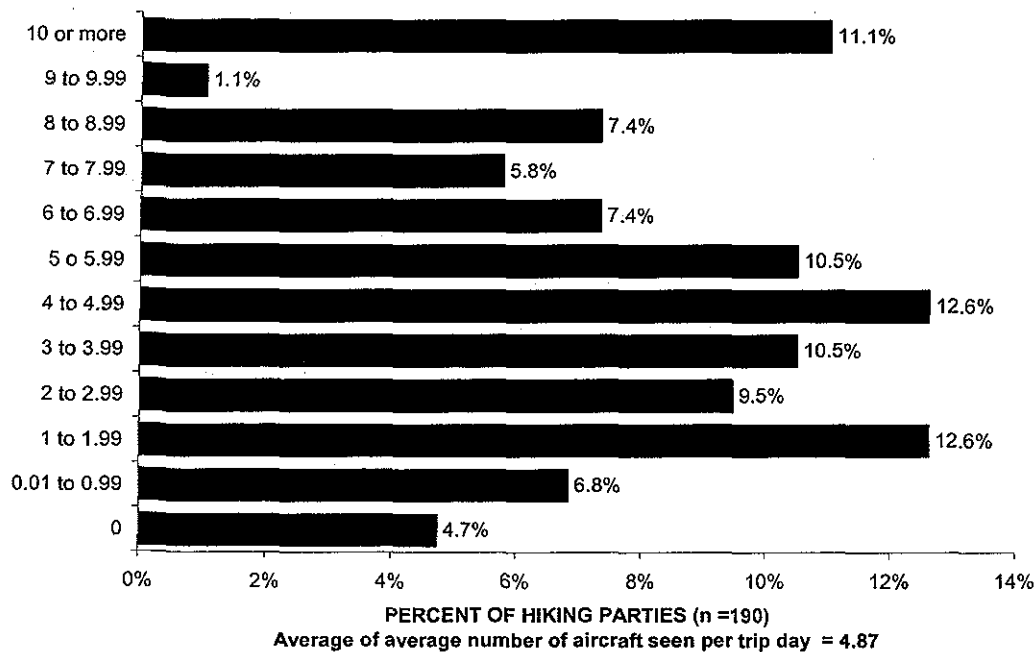
V. Aircraft Encounters and Evaluations

Number of Encounters With All Aircraft

Diary, Version 1

8. How many times did you hear or see aircraft today? (If none, write "0" and skip to question 12)

FIGURE 5.12: Diary, v1 (aggregated), Q-8
AVERAGE NUMBER OF AIRCRAFT SEEN PER TRIP DAY



V. Aircraft Encounters and Evaluations

Encounters with Different Kinds of Aircraft

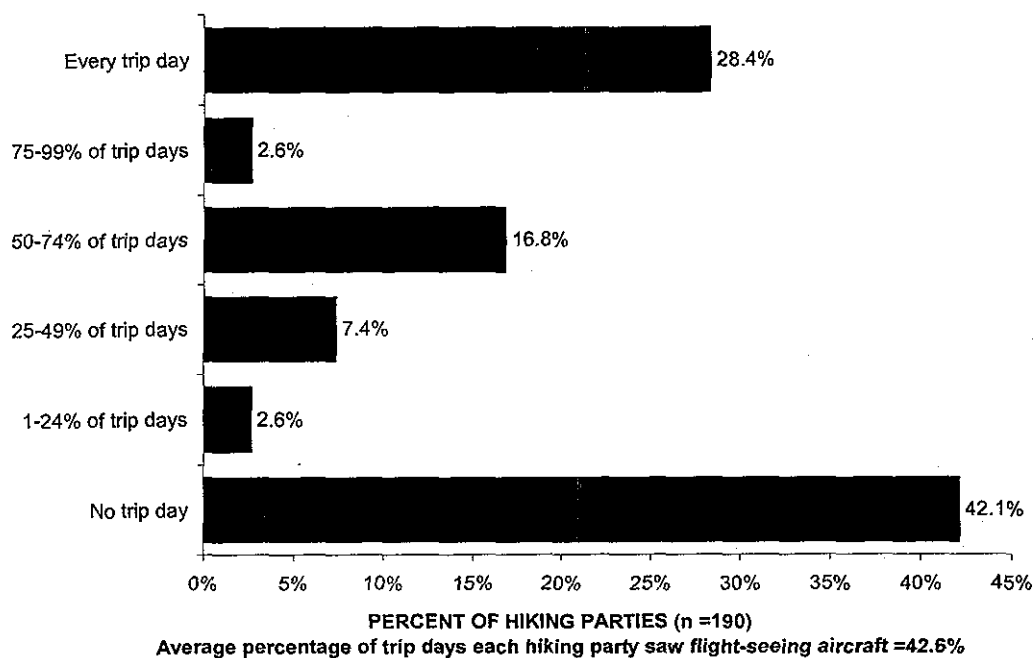
Diary, Version 1

10. What kind(s) of aircraft flew over? (Circle each type you identified and write the number of each type seen in the blank following)

- | | |
|--------------------------|----------------|
| 1. Propeller plane _____ | 3. Jet _____ |
| 2. Helicopter _____ | 4. Other _____ |

Both propeller planes and helicopters are used for commercial flight-seeing trips in DENA. In order to represent backpackers' experience with this general class of aircraft, data for propeller planes and helicopters were combined. Summary figures for all types of aircraft can be found in Appendix J. However, this chapter reports only summary figures for flight-seeing aircraft.

FIGURE 5.13: Diary, v1 (aggregated), Q-10
PERCENTAGE OF TRIP DAYS EACH HIKING PARTY SAW FLIGHT-SEEING AIRCRAFT



V. Aircraft Encounters and Evaluations

FIGURE 5.14: Diary, v1 (aggregated), Q-10
AVERAGE NUMBER OF FLIGHT-SEEING AIRCRAFT SEEN PER TRIP DAY

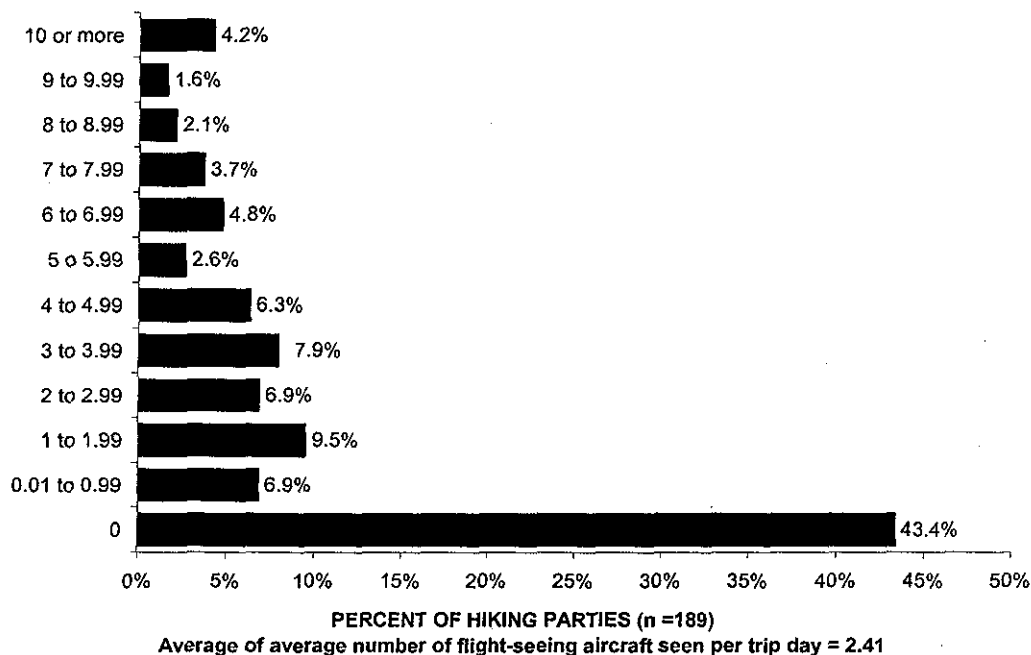
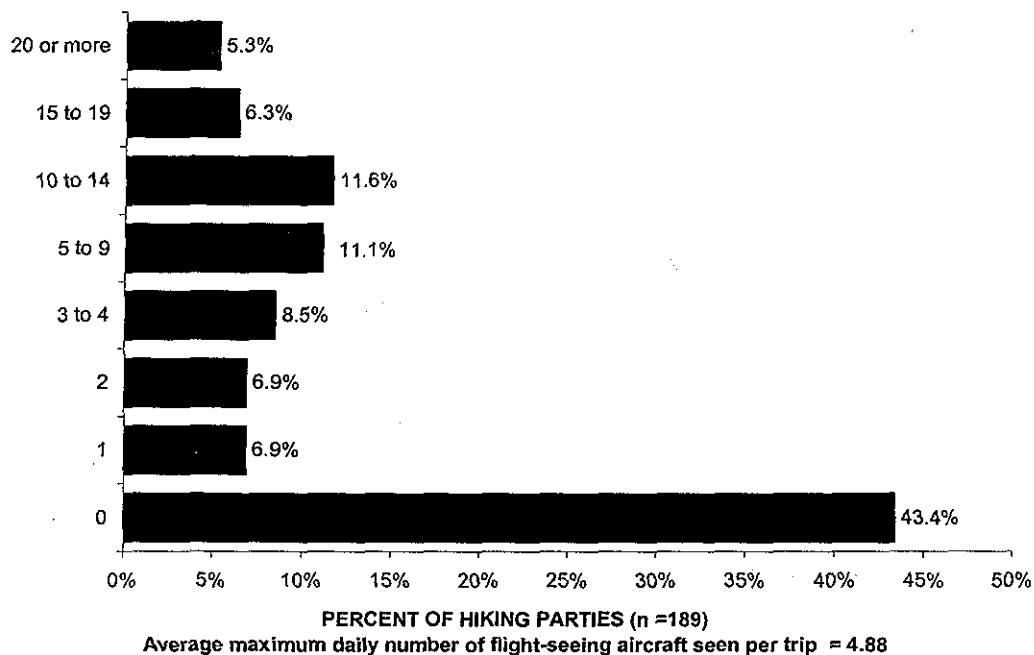


FIGURE 5.15: Diary, v1 (aggregated), Q-10
MAXIMUM DAILY NUMBER OF FLIGHT-SEEING AIRCRAFT SEEN PER TRIP



V. Aircraft Encounters and Evaluations

FIGURE 5.16: Diary, v1 (aggregated), Q-10
MINIMUM DAILY NUMBER OF FLIGHT-SEEING AIRCRAFT SEEN PER TRIP

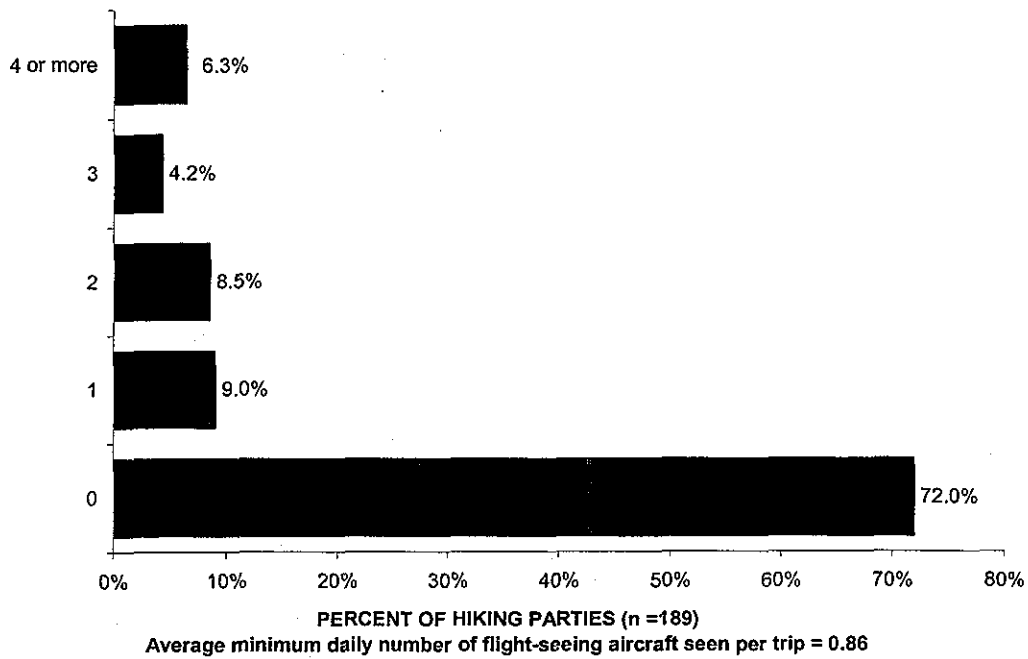
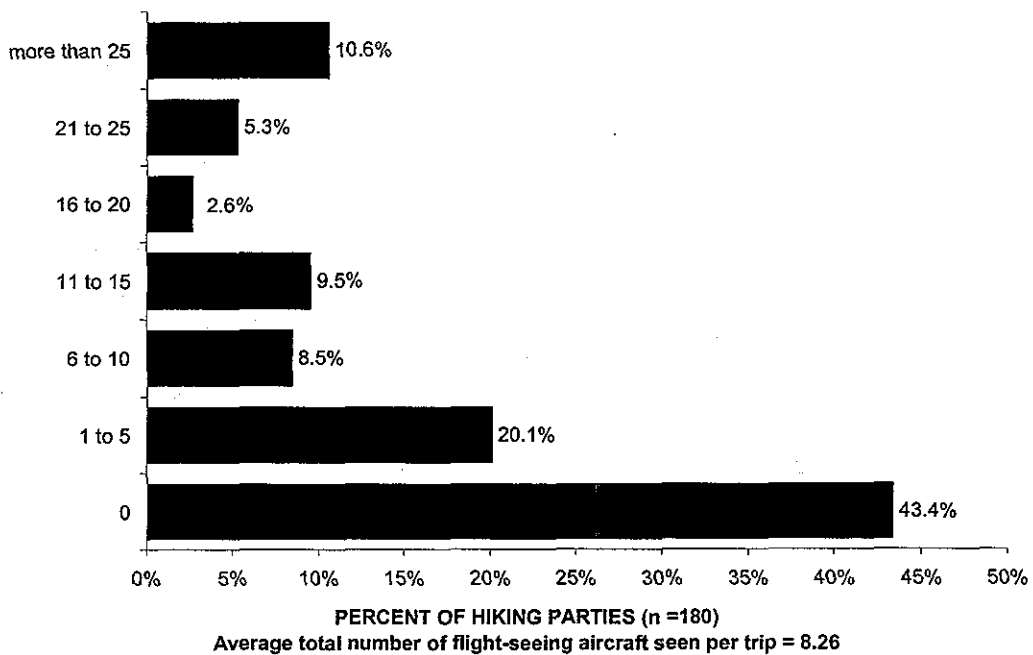


FIGURE 5.17: Diary, v1 (aggregated), Q-10
TOTAL NUMBER OF FLIGHT-SEEING AIRCRAFT SEEN PER TRIP



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Duration of Aircraft Encounters

A question filled out daily in Version 1 of the trip diary asked backpackers to report the total time that any aircraft could be seen/heard (the question is reproduced below). Because data were collected on a daily basis and then aggregated to represent each backpacking party's trip, five summary figures can represent the data from the duration question:

- The *Average Time per Trip Day* represents the total time that aircraft were reported as present during a trip divided by the number of trip days. Because partial hiking days could be recorded on the first and/or last day of the diary, the presented averages are low estimates of the time that aircraft are heard/seen per full hiking day.
- The *Maximum Daily Time per Trip* represents the number of minutes that aircraft were reported as present on the day when aircraft were heard/seen for the longest time. For example, if a party on a three-day hiking trip reported hearing/seeing aircraft for 3, 1, and 2 minutes, the *Maximum Daily Time* would be 3 minutes.
- The *Minimum Daily Time per Trip* is calculated in the same manner as the *Maximum Daily Time*, except that it represents the trip day when aircraft were heard/seen for the shortest time (i.e., in the example, the *Minimum Daily Time* would be 1).
- The *Standard Deviation per Trip Day* represents the variability in the daily time aircraft were reported as present across the days of each trip. The standard deviation is the conventional way of describing how much a group of scores (in this case, daily time of aircraft encounters reported across multiple trip days) vary around the mean of that group (in this case, the *Average Time per Trip Day*).
- The *Total Time per Trip* is simply the total time that aircraft were reported as present during a trip.

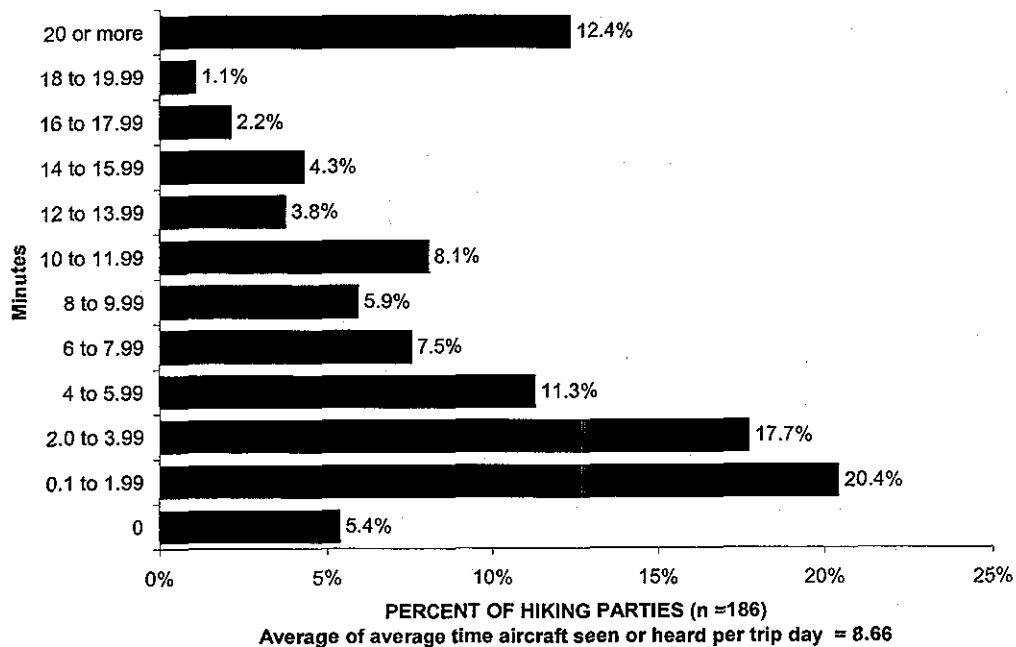
All the summary figures can be found in Appendix K. In this chapter only the sub-set of the summary figures used in later regression analyses are reported.

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Diary, Version 1

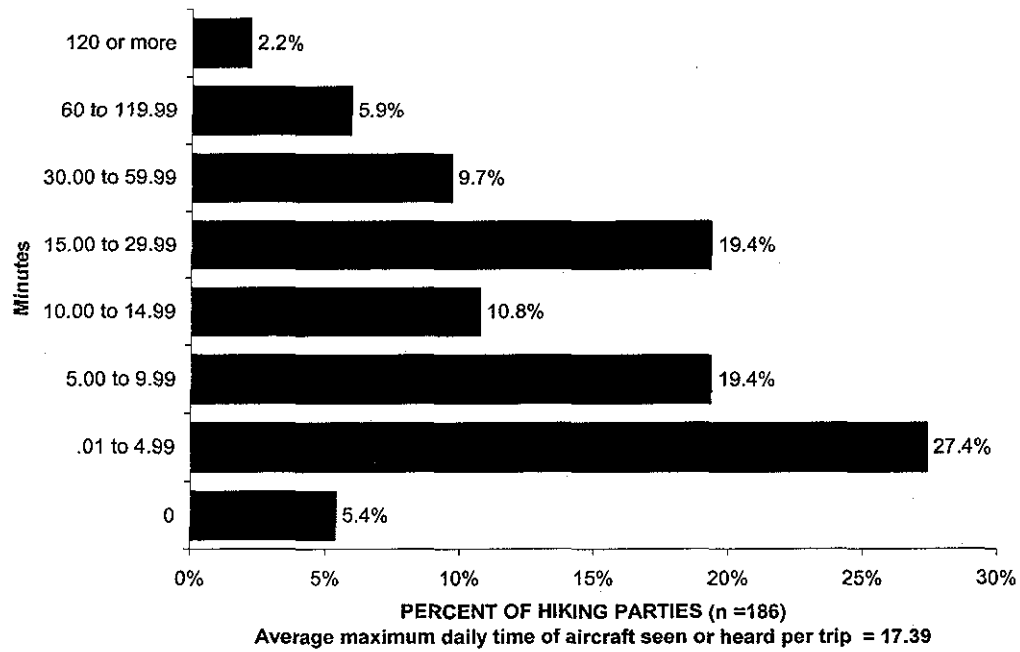
9. How long was the total time that you could hear or see aircraft? (In minutes.)

FIGURE 5.18: Diary, v1 (aggregated), Q-9
AVERAGE TIME AIRCRAFT SEEN OR HEARD PER TRIP DAY



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FIGURE 5.19: Diary, v1 (aggregated), Q-9
MAXIMUM DAILY TIME AIRCRAFT SEEN OR HEARD PER TRIP



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Loudness of Aircraft Encounters

A question filled out daily in Version 1 of the trip diary asked backpackers to report a loudness rating for the loudest aircraft they heard (the question is reproduced below). Because data were collected on a daily basis and then aggregated to represent each backpacking party's trip, four summary figures could represent the data from the loudness question:

- The *Average Loudest Aircraft per Trip Day* represents the sum of the loudness ratings of the loudest aircraft reported on each trip day divided by the number of trip days.
- The *Maximum Loudest Aircraft per Trip* represents the loudness rating of the loudest aircraft reported during a trip.
- The *Minimum Loudest Aircraft per Trip* represents the rating of the loudest aircraft encountered on the trip day when the loudness rating was lowest. For example, if a party on a three-day hiking trip reported maximum daily loudness ratings of 3, 1, and 3, the Minimum Loudest Aircraft would be 1.
- The *Standard Deviation of Loudest Aircraft per Trip Day* represents the variability in the daily time aircraft were reported as present across the days of each trip. The standard deviation is the conventional way of describing how much a group of scores (in this case, daily time of aircraft encounters reported across multiple trip days) vary around the mean of that group (in this case, the Average Loudest Aircraft per Trip Day).

All the summary figures can be found in Appendix K. In this chapter only the summary figure used in later regression analyses is reported.

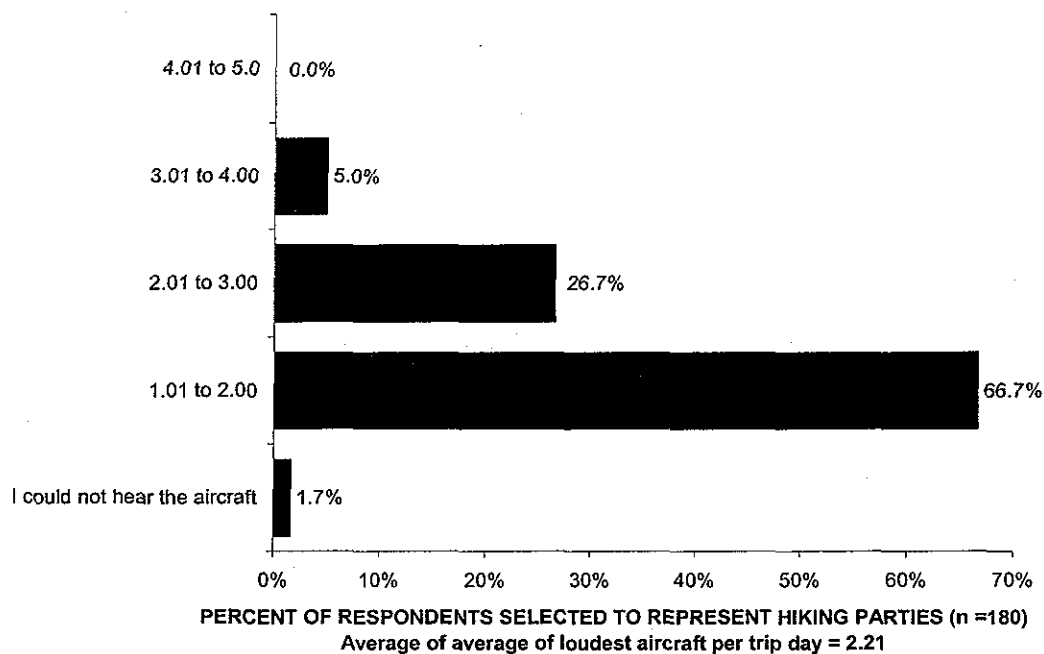
V. Aircraft Encounters and Evaluations

Diary, Version 1

11. Which of the following best describes how loud the sound of the aircraft was at its loudest point? (*List number that describes the sound*)

1. I couldn't hear the aircraft.
2. Background sound where you could still talk in a normal voice
3. Conspicuous sound where you would have to speak loudly to be heard
4. Dominant sound where you would have to shout to be heard
5. Overwhelming sound where you couldn't even hear shouting

FIGURE 5.20: Diary, v1 (aggregated), Q-11
AVERAGE OF LOUDEST AIRCRAFT PER TRIP DAY



*Taking the average results in values that fall between the response options

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Backpackers' Reactions to Aircraft: An Experiment in Providing Information

Reactions to aircraft were affected by several factors, including the provision of information in the Aircraft Information Experiment. Thus, it would be misleading to simply present aggregated results for all post-hike questions without considering those factors. Accordingly, two factors are discussed below in relation to backpackers' reactions to aircraft. These are: 1) knowledge prior to the trip that aircraft commonly fly over DENA, and 2) whether backpackers were given information about flight-seeing aircraft in the aircraft information experiment.

Knowledge of Aircraft Flying Over DENA Before this Backpacking Trip

During the post-hike interview, all respondents were asked about their knowledge of aircraft before this backpacking trip. Because the question asks "before this trip", it was expected that there should be no difference across the Aircraft Information Experiment conditions. As can be seen in Figure 5.21, a greater proportion of respondents in the information condition (72.9%) than in the control condition (55.0%) reported knowing about aircraft before this backpacking trip, $\chi^2(1) = 13.30, p < .001$.

Post-Hike Interview

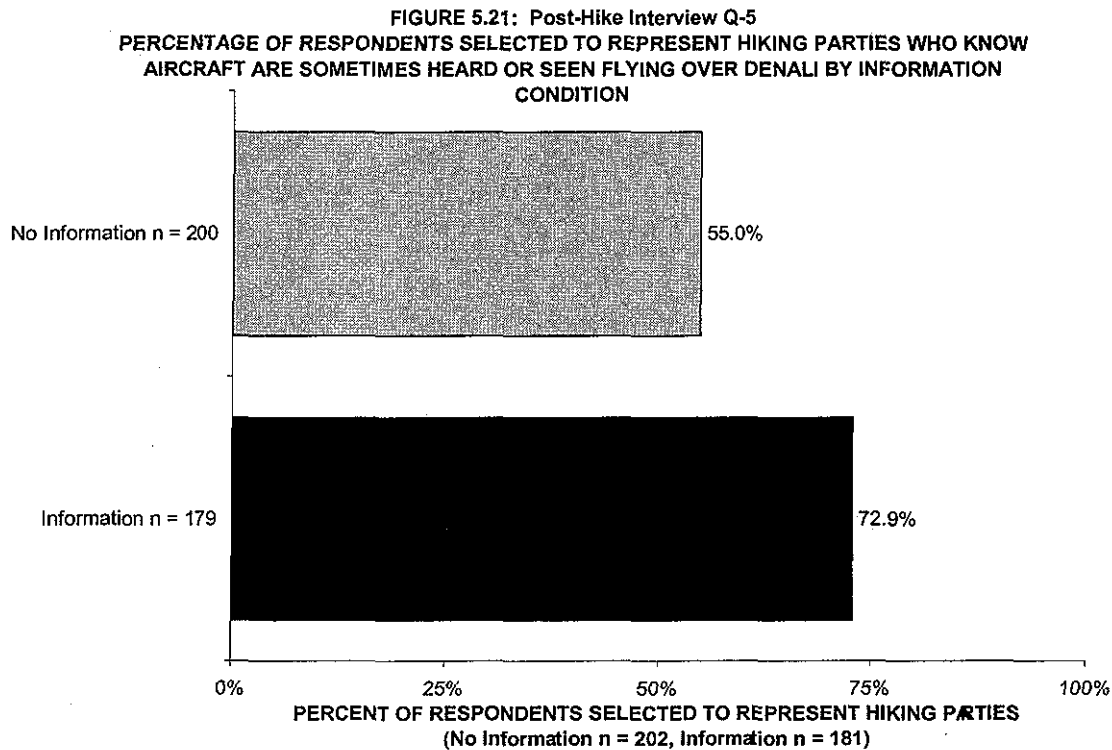
5. Before this backpacking trip, did you know that aircraft are sometimes heard or seen flying over Denali?

NO

YES → 5.1 How did you learn about the presence of aircraft at Denali? (Check as many as reported. Probe by asking "Any others?" if they stop at one source.)

- 1 HEARD/SAW THEM DURING PRESENT VISIT
- 2 PARK WEB SITE
- 3 PRIOR VISITS
- 4 GENERAL KNOWLEDGE/ALASKA EXPERIENCE
- 5 FRIENDS OR RELATIVES
- 6 TRAVEL GUIDE/TOUR BOOK
- 7 NEWSPAPER/MAGAZINE
- 8 MAPS/BROCHURES
- 9 RADIO/TELEVISION
- 10 DON'T REMEMBER WHERE
- 11 OTHER (Please specify: _____)

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Because this question was asked during the post-trip interview, one possibility is that individuals in the information condition were misattributing the source of their knowledge about aircraft overflights. That is, they might have mistakenly reported that they learned about aircraft outside the context of this study when in fact they learned about aircraft in the pre-test interview. Individuals in the information condition were also asked this question in the pre-hike interview prior to receiving information about aircraft. If such respondents were misattributing the source of their knowledge, then fewer of them should report knowing about aircraft in the pre-trip interview than in the post-trip. Examination of the pre-hike interview data revealed that 75.2 percent of respondents in the information condition had knowledge of aircraft overflights prior to participating in the study. Thus, the percentage of respondents reporting knowledge of aircraft over

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Denali in the pre-trip data was comparable to the post-trip data (75.2% vs. 72.9% respectively).⁵

We are left with the unexplained finding that more respondents in the information condition had knowledge of aircraft overflights in Denali than did respondents in the no information condition and must conclude that the randomization process did not produce two equivalent groups (perhaps simply due to chance). Because knowledge of aircraft may affect reactions to aircraft, initial level of knowledge of aircraft was examined for each dependent variable. The results of these analyses are reported along with the other findings for each dependent variable.

Were Respondents Annoyed by Aircraft?

Post-Hike Interview

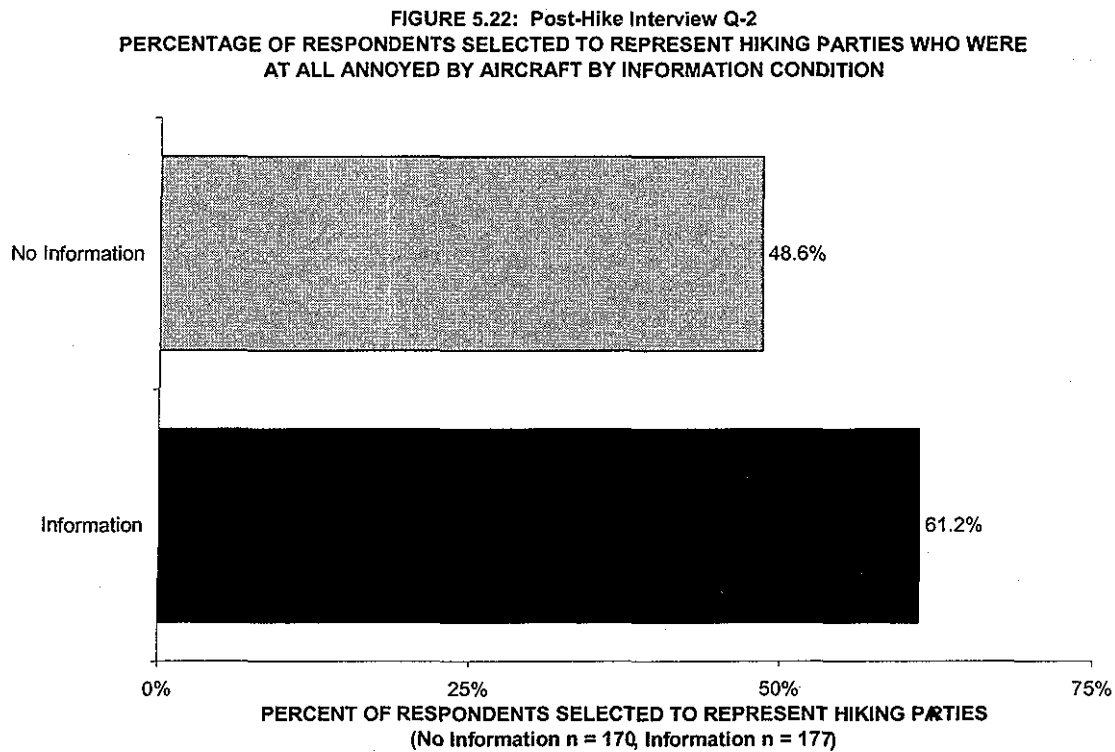
2. Were you at all annoyed by aircraft during this hiking trip in Denali? (*Circle one number.*)
- 1 NO → GO TO QUESTION 3
2 DON'T KNOW/CAN'T REMEMBER → GO TO QUESTION 3
3 YES → 2.1 How annoyed would you say that you were? (Give respondent the laminated card with response scale.)
- 1 SLIGHTLY ANNOYED
2 MODERATELY ANNOYED
3 VERY ANNOYED
4 EXTREMELY ANNOYED

As can be seen in Figure 5.22, a greater proportion of respondents who received information about aircraft reported being annoyed by aircraft, $\chi^2(1) = 5.54, p = .019$. Further analyses revealed that the effect of information condition varied by initial knowledge of aircraft. Figure 5.23 shows no effect of information condition for respondents who reported knowing about aircraft prior to their trips (57.9% vs. 60.5%), $\chi^2(1) = 0.15, p = .699$. For respondents who did not know about aircraft, however, a greater proportion of those in the information condition reported being annoyed by

⁵ Additional analyses comparing the number of respondents who said they knew about aircraft in the pre-trip interview but said they didn't know in the post-trip to those who said they didn't know in the pre-trip and then said they knew in the post-trip showed that relatively few respondent made each switch.

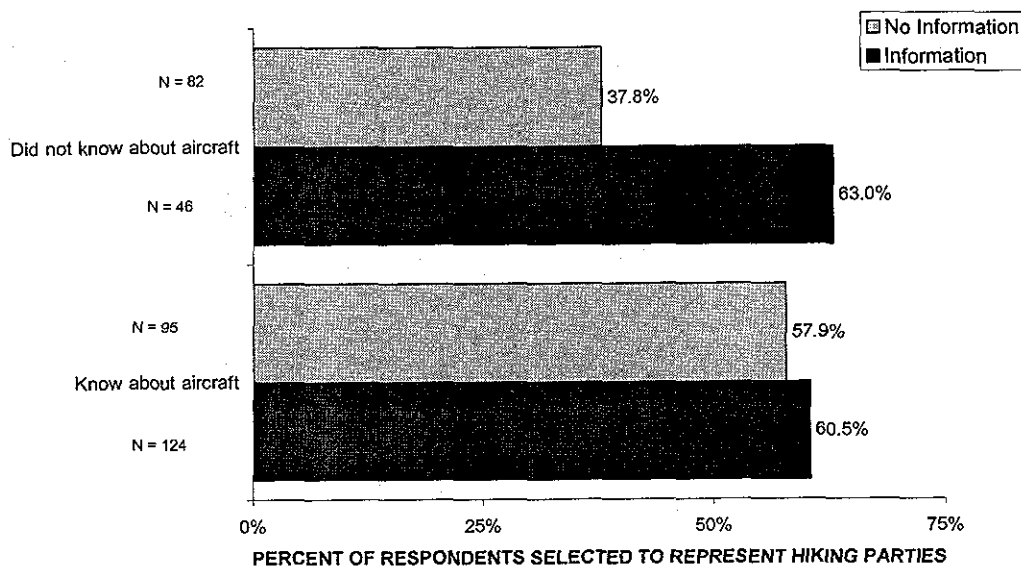
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aircraft than respondents in the control condition (63.0% vs. 37.8%), $\chi^2(1) = 7.54, p = .006$ (see Figure 5.23).



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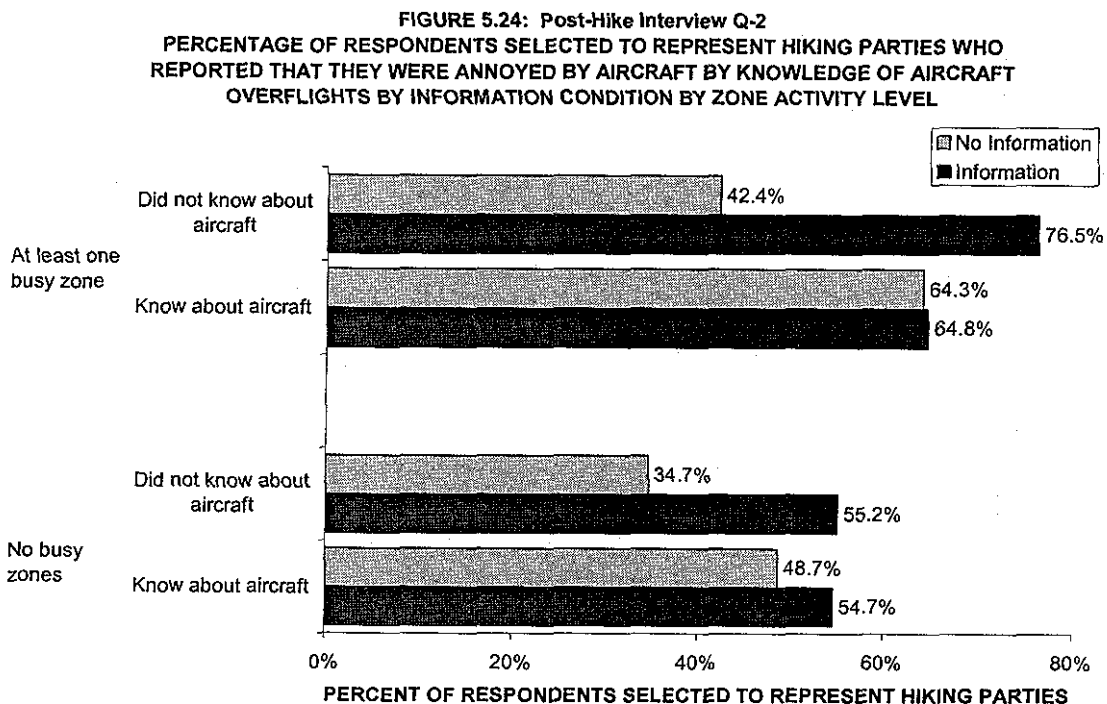
FIGURE 5.23: Post-Hike Interview Q-2
PERCENTAGE OF RESPONDENTS SELECTED TO REPRESENT HIKING PARTIES WHO
REPORTED THAT THEY WERE ANNOYED BY AIRCRAFT BY KNOWLEDGE OF AIRCRAFT
OVERFLIGHTS BY INFORMATION CONDITION



Because hikers in the information condition were both given information and asked to keep a diary of aircraft encounters one might argue that increased annoyance levels in that condition are partly or entirely due to the increased attention brought about by the diary rather than the information given about aircraft. However, the data in Figure 5.23 are not consistent with such an argument. If the diary was the source of increased annoyance, respondents in the information condition should show higher levels of annoyance, even when comparing only those hikers who knew about aircraft before their trip. The fact that no such difference was found argues for the interpretation that the information and not the diary increased annoyance with aircraft.

We also examined whether the relationship between annoyance and knowledge of aircraft differed based on the level of aircraft activity in the zones where respondents hiked and found that increased annoyance after learning about aircraft was most evident among respondents who did not know about aircraft and who hiked in at least one zone with high levels of aircraft activity (see Figure 5.24).

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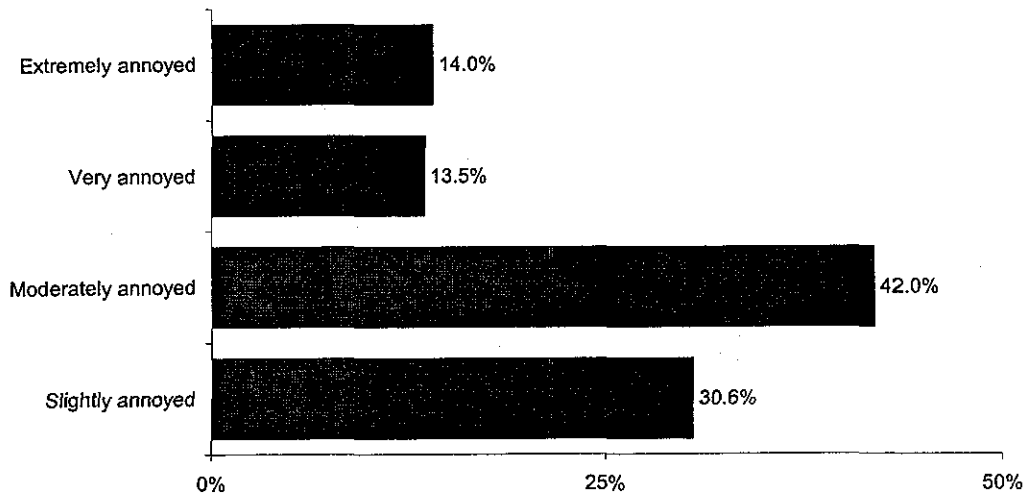


The zones classified as busy were determined through examination of a flight corridor map produced by DENA, by examination of DBS data, and in consultation with DENA staff. "Busy zones" included zones 2-13, 18, and 24.

Although more people in the information condition reported being annoyed, the degree to which people were annoyed by aircraft did not differ across information condition, $\chi^2(3) = 1.00, p = .800$. Respondents were most likely to report being "moderately annoyed" by aircraft (42.0%) with "slightly annoyed" (30.6%) being the second most frequent response (see Figure 5.25). This pattern did not differ by level of knowledge of aircraft or by zone activity level.

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**FIGURE 5.25: Post-hike Interview Q-2.1
DEGREE TO WHICH RESPONDENTS SELECTED TO REPRESENT HIKING PARTIES
REPORTED BEING ANNOYED BY AIRCRAFT**



PERCENT OF RESPONDENTS SELECTED TO REPRESENT HIKING PARTIES (n=193)
Includes only the 48.6% of the No information and the 61.2% of the Information condition respondents who reported being annoyed.

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Did Aircraft Add to or Detract from Respondents' Enjoyment of DENA?

Post-Hike Interview

4. Did aircraft overflights either add to or detract from your enjoyment of Denali on this trip? (*Circle one number.*)

1 NO, DIDN'T ADD OR DETRACT → **GO TO QUESTION 5**

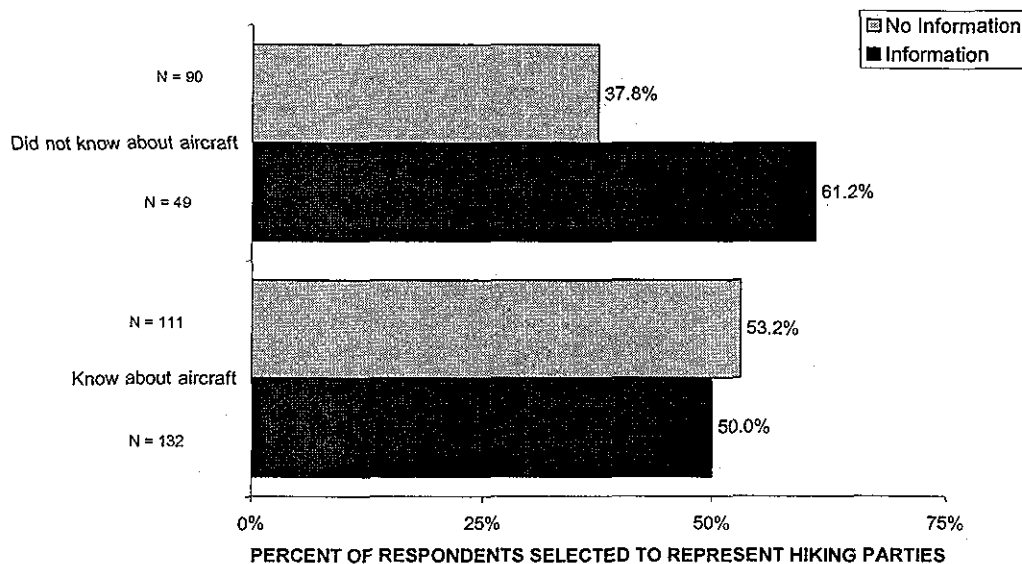
2 YES → 4.1 How would you say that aircraft affected your trip? (*Give respondent the laminated card with response scale.*)

- | | |
|---|----------------------|
| 1 | ADDED GREATLY |
| 2 | ADDED MODERATELY |
| 3 | ADDED SLIGHTLY |
| 4 | DETRACTED SLIGHTLY |
| 5 | DETRACTED MODERATELY |
| 6 | DETRACTED GREATLY |

Across the entire sample of backpackers selected to represent hiking parties, information condition did not affect the proportion of people who said that aircraft either added or detracted from their enjoyment of Denali, $\chi^2(1) = 1.75, p = .186$. However, further analyses revealed an effect that varied by initial knowledge of aircraft. For respondents who knew about aircraft, information condition had no effect (53.2% vs. 50.0%), $\chi^2(1) = 0.24, p = .624$. In contrast, among respondents who had no knowledge of aircraft, a greater proportion in the information condition reported that aircraft either added or detracted from their experience (61.2% vs. 37.8%), $\chi^2(1) = 7.02, p = .008$ (see Figure 5.26).

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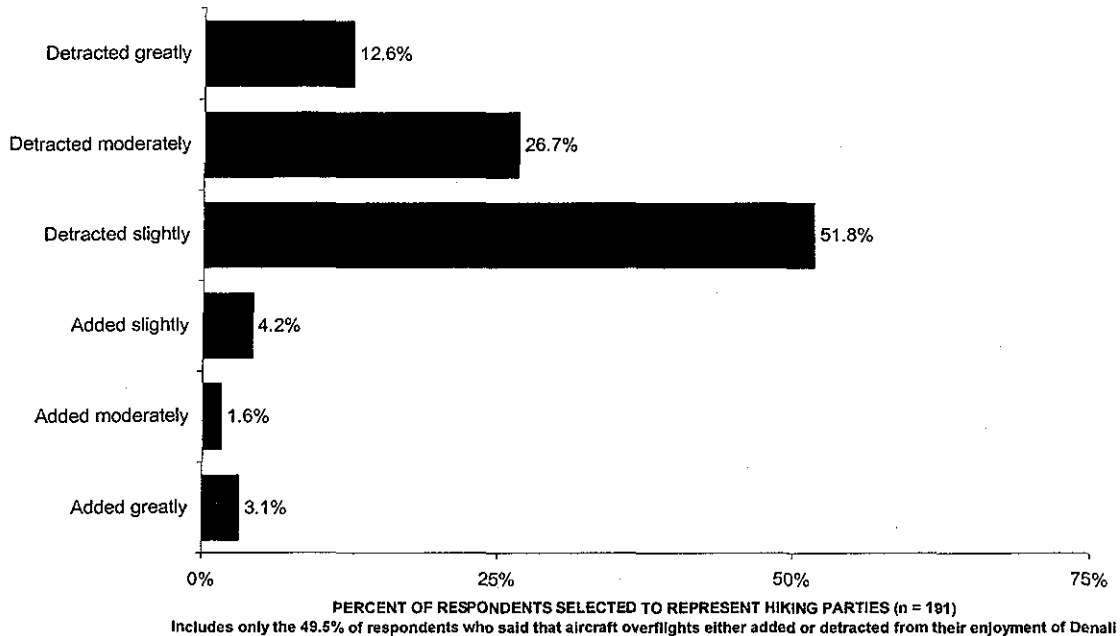
FIGURE 5.26: Post-Hike Interview Q-4
PERCENTAGE OF RESPONDENTS SELECTED TO REPRESENT HIKING PARTIES WHO
REPORTED THAT AIRCRAFT ADDED OR DETRACTED FROM THEIR ENJOYMENT BY
KNOWLEDGE OF AIRCRAFT OVERFLIGHTS BY INFORMATION CONDITION



Of respondents who indicated that aircraft either added or detracted from their enjoyment, about three-fourths of them reported that aircraft detracted slightly or moderately from their enjoyment of Denali (51.8% and 26.7%, respectively), and about 10 percent of them indicated that aircraft added to their enjoyment of Denali (see Figure 5.27). This pattern did not differ by level of knowledge of aircraft or the aircraft activity level in visited zones.

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FIGURE 5.27: Post-Hike Interview Q-4.1
HOW RESPONDENTS SELECTED TO REPRESENT HIKING PARTIES REPORTED THAT
AIRCRAFT OVERFLIGHTS ADDED TO OR DETRACTED FROM THEIR TRIP ENJOYMENT



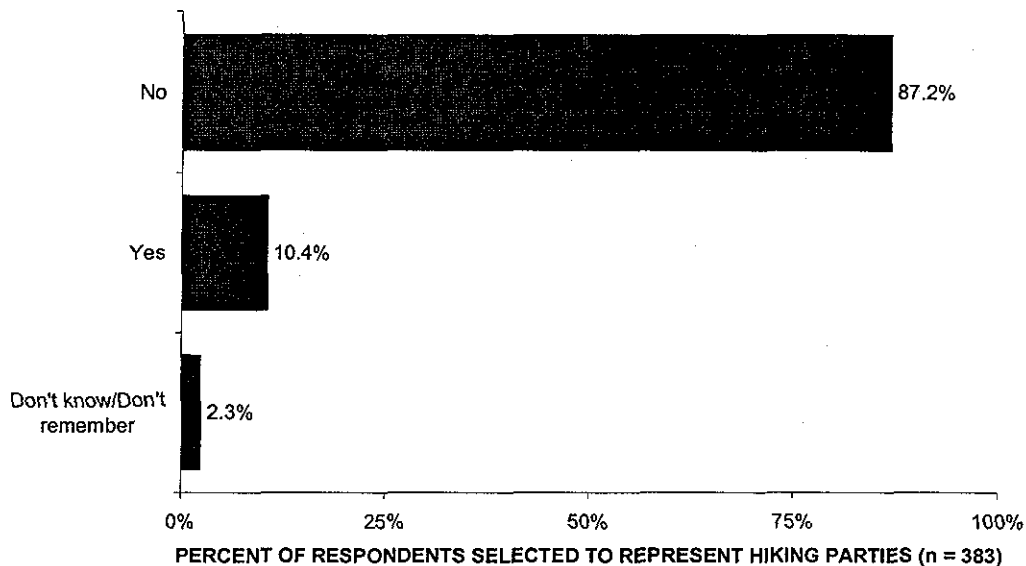
Will Aircraft Affect Future Decisions to Visit DENA?

Post-Hike Interview

3. Will the aircraft you heard and/or saw during this trip affect your future visits to Denali? (Circle one number.)
- 1 NO → GO TO QUESTION 4
 - 2 DON'T KNOW → **GO TO QUESTION 4**
 - 3 YES → 3.1 How will your decisions concerning future visits be affected? (Classify response made.)
 - 1 Will you be more likely to return to Denali
 - 2 Will you come at a time when there is less aircraft activity
 - 3 Will you plan to do different activities in Denali
 - 4 Will you visit a different area of Denali
 - 5 Will you stop visiting Denali
 - 6 Other effects not described (Please specify below.)
 - 7 Don't know how my decisions will be affected

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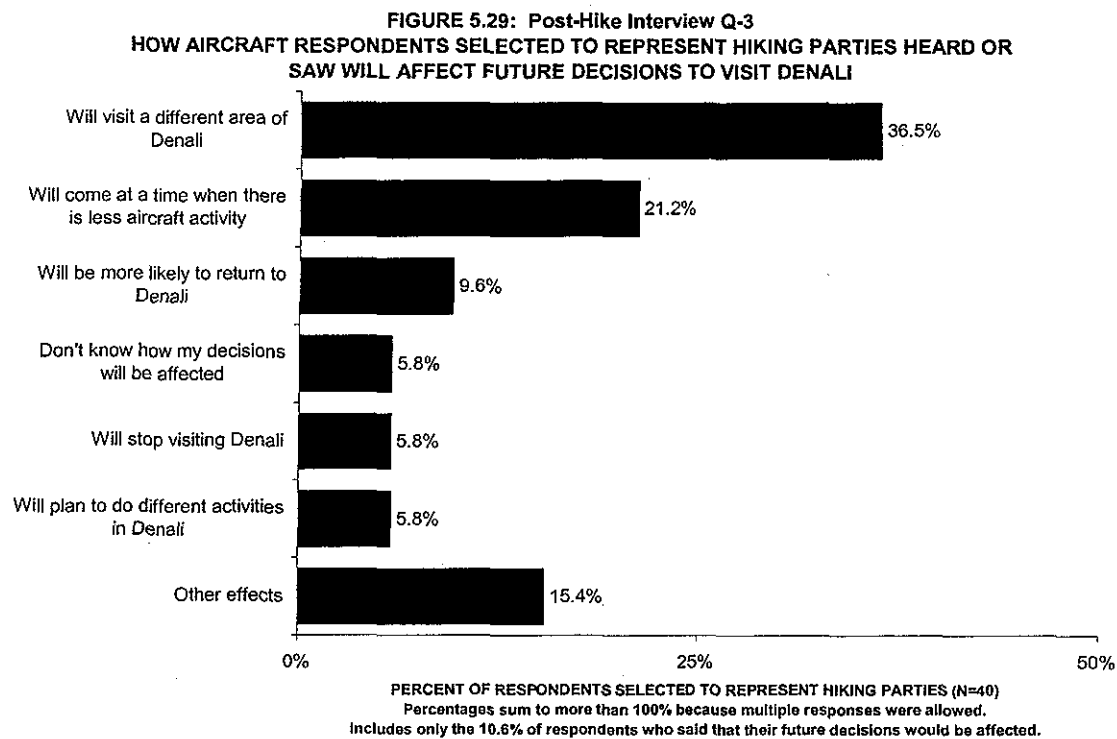
FIGURE 5.28: Post-Hike Interview Q-3
WILL AIRCRAFT RESPONDENTS SELECTED TO REPRESENT HIKING PARTIES HEARD OR
SAW AFFECT FUTURE DECISIONS TO VISIT DENALI BY INFORMATION CONDITION



Information condition did not affect the percentage of people saying that the aircraft they experienced will affect future decisions to visit Denali, $\chi^2(1) = 1.22, p = .269$. As seen in Figure 5.28, most respondents (87.2%) reported that the aircraft they heard or saw would not affect future visits to Denali. Even though over 50 percent of respondents indicated that they were annoyed by aircraft and about 45 percent⁶ of respondents indicated that aircraft detracted from the enjoyment of their visit, most respondent's experience with aircraft will not alter future visits to Denali. Of those respondents indicating that aircraft they experienced will affect future visits to Denali, 36.5 percent (4% of all respondents) said that they would visit a different area of Denali (see Figure 5.29). This strategy is feasible, as aircraft tend to fly in certain areas of the park. The second most frequent way in which future decisions will be affected was to come at a time when aircraft activity is less (21.2% of those affected; 2% of all respondents). This strategy is difficult to put into action as aircraft fly during hiking

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season as long as the weather is good. Thus, avoiding aircraft by coming at a different time means hiking when the weather is poor. Caution is necessary in interpreting these results because the question assumed that backpackers would return to DENA when some proportion are unlikely to do so. It is unclear how such backpackers interpreted and filled out the question.



Interpretation of the Aircraft Information Experiment

For backpackers selected to represent hiking parties, the results of the post-hike interview show that those who did not know about the presence of aircraft in DENA prior to their trip and who also participated in the information condition of the Aircraft Information Experiment made both increased reports of annoyance due to aircraft and increased reports that aircraft detracted from their enjoyment of DENA⁶ (see Figure 5.23

⁶ This figure was calculated by taking the 49.5 percent of people who said aircraft added or detracted from enjoyment multiplied by 91.1 percent, which reflects the percentage of those people saying that aircraft detracted from their enjoyment.

⁷ Note that less than 10 percent of respondents reporting that aircraft "added or detracted" reported that they added to their enjoyment.

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and 5.27). These results are contrary to the predicted pattern in which information was expected to mitigate the negative impacts of aircraft overflights.

Although further research would be necessary to examine the reasons for this unexpected effect of information, some hypotheses can be formulated. Often, such hypotheses are generated by considering the conditions under which aircraft information might increase or decrease annoyance. For example, aircraft information may only be effective when flight-seeing is perceived to be a needed or legitimate use of the wilderness (Gramann 1999; Kariel 1990). Accordingly, the study results may have resulted because backpackers did not see the flight-seeing activities as needed, appropriate, or justifiable uses of the Denali wilderness.

A second possible limiting condition is backpackers' perceived degree of control over their exposure to aircraft (Staples 1997). The information provided in the AIE may have been ineffective because backpackers felt that they had no feasible options for avoiding aircraft and thus had no control over that aspect of their experience. A change in the experimental procedure may have exacerbated such an effect. It was originally desired that backpackers would be given the aircraft information before setting their zone itineraries. However, the logistics of the situation forced the use of a procedure where the information was presented later. Few, if any, hikers were likely to deem it feasible to return to the desk and alter their zone reservations in order to avoid aircraft. On the other hand, it is not clear that acceptable alterations were available even if they had wished to make them. The map showing common flight-seeing routes covers many of the most popular backcountry zones. Even if the aircraft information were presented earlier, to a backpacker not willing to hike in the most remote zones, it is not clear whether backpackers would feel that realistic options for avoiding aircraft were available.

Given the findings that many backpackers selected to represent hiking parties knew about aircraft prior to arriving at Denali (see Figure 5.1) but almost none of them reported that they altered their trip plans based on considering the presence of aircraft (see Figure 5.11), possible perceptions that flight-seeing was unneeded or inappropriate seem to be the more tenable of the two hypotheses explaining the ineffectiveness of the aircraft information in limiting the impact of encounters with aircraft.

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How Encounters With Aircraft Affect Backpackers' Trip Experiences

The prior section describes the levels of annoyance and other possible reactions to aircraft that backpackers selected to represent hiking parties exhibited. This section describes more detailed analyses of the ways aircraft affect backpackers' trip experiences. These analyses examine whether reactions such as annoyance were due to encounters with aircraft, expectations that backpackers bring to their trip, or some combination thereof. The results will help managers judge the seriousness of current impacts of aircraft on trip experiences, but their most significant contribution is to provide information useful in assessing various alternatives for mitigating such impacts.

Two sets of analyses are presented in this section. The first set (i.e., the Dominance Analyses) determined which of three variables related to aircraft encounters (described below) best predict each of three different measures of trip experience. The second set of analyses examined more complex relationships (i.e., two-way interactions) among a set of predictor variables that included those examined in the prior analysis. Both analyses used the same set of predictor and outcome (or predicted) variables, described below.

Measures of Trip Experience (Predicted Variables)

Three different measures of trip experience were used as outcome variables: 1) degree annoyed by aircraft, 2) effect of aircraft on overall trip enjoyment, and 3) overall trip satisfaction. The first two of these variables were more directly related to backpackers' experience with aircraft and were collected during the post-trip interview. The third variable was a general satisfaction question measured during the mail survey.

Degree annoyed by aircraft. During the post-trip interview, respondents who saw aircraft were asked a two-part question about whether the aircraft annoyed them (see p. 123). In order to create a single, continuous measure of annoyance, respondents who indicated that they were not annoyed in the first question were scored as a "0 – Not annoyed" on the annoyance scale that made up the second question. One respondent circled "Don't know/Don't remember" to the first question and was excluded from all analyses where annoyance was the dependent measure.

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Degree annoyed by aircraft was included in the questionnaire largely based on its use in past studies of aircraft and recreationists. Many studies have examined the relationship between aircraft encounters and annoyance and a means of comparing prior studies to the results obtained in Denali was desirable. However, annoyance does not map directly onto the mandates and goals of recreational managers.

Effect of aircraft on overall trip enjoyment. During the post-trip interview, respondents who saw aircraft were also asked two questions concerning whether aircraft had added or detracted from their trip enjoyment (see p. 127). A single, continuous measure of the effect of aircraft on overall trip enjoyment was generated by adding a category ("did not add or detract") between the "Added slightly" and "Detracted slightly" categories. Respondents who indicated in the first question that aircraft did not add or detract from their trip enjoyment were given this new intermediate code.

This second measure of trip experience is more clearly related to managerial goals and mandates than is annoyance. For example, the central NPS mandate dictates that managers provide for the enjoyment of park resources.

Overall trip satisfaction. Respondents were asked about their overall trip satisfaction in the mail survey (completed after the post-trip interview in the mail questionnaire; see p. 153 for specific wording of question). No transformations were necessary to obtain a continuous measure.

Overall trip satisfaction is generally a difficult measure to relate to manageable dimensions of a visitor's experience. There are several reasons for this difficulty, including low variability (most visitors report very high satisfaction), the high likelihood that visitors are psychologically motivated to report high satisfaction, and the predominance of unmanageable factors (e.g., weather, mosquitoes) in determining satisfaction (Gramann 1999). Nonetheless, it was included in the questionnaire and in this analysis because any manageable factor that is related to overall trip satisfaction is of clear importance to managers.

Measures Related to Aircraft Encounters (Predictor Variables)

Two general classes of variables related to aircraft encounters were used as predictor variables: 1) characteristics of aircraft encounters (collected in the diary); and

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2) individual difference variables associated with aircraft encounters (collected at the pre-test). Characteristics of aircraft encounters are only available for backpackers who encountered at least one aircraft. Thus, the analyses reported in this section exclude the 9 respondents who reported that they heard or saw no aircraft.

Variables associated with characteristics of aircraft encounters. Characteristics of aircraft encounters included number of aircraft, length of time of aircraft encounter, and loudness of aircraft encounter (see pp. 112-122 and Appendix J). These data were aggregated across the trip for each respondent in multiple ways so that up to three variables could represent each characteristic in further analyses. The number of aircraft encountered and minutes that aircraft were encountered were represented as an average across trip days, total per trip, and maximum day per trip. The loudness of the aircraft encountered was represented by the average of the daily loudest encounter and by the maximum loudest aircraft per trip.

It was necessary to select a subset of the highly correlated measures representing aircraft encounters for use in later analyses. Toward this end, dominance analyses were used to determine whether one of each set of variables was the dominant, or strongest predictor for each trip experience measure.⁸ Table 5.1 below presents the results of these analyses. Where dominance could be established, the dominant variable representing each characteristic of the aircraft encounters was used in later regression analyses. In the two cases where dominance could not be established, the average per trip day measure was used.⁹

⁸ Dominance analysis is a statistical method using multiple regression equations to determine whether one of several independent variables is consistently the strongest predictor of the dependent variable and can be considered "dominant" in terms of predictive ability (Budescu 1993).

⁹ The average measure was used because respondents took trips of different lengths and the average equates encounter data across trip day.

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Table 5.1. Results of dominance analysis to determine the best predictors of trip experience variables from the various ways of representing aircraft encounter characteristics.

		Characteristics of Aircraft Encounters		
		Number of Aircraft Encountered	Time Aircraft Encountered	Loudness of Aircraft Encountered
Measures of Trip Experience	Annoyance with Aircraft	Average per Trip Day	Average per Trip Day	Trip Average of Daily Loudest Encounter
	Aircraft Effect on Trip Enjoyment	Average per Trip Day	No Dominance Established	Trip Average of Daily Loudest Encounter
	Overall Trip Rating	No Dominance Established	Max Trip Day	Trip Average of Daily Loudest Encounter

In sum, analyses predicting annoyance and effect of aircraft on overall trip enjoyment will have the following predictor variables: 1) average number of aircraft encountered per trip day, 2) average time of aircraft encountered per trip day, and 3) average daily maximum loudness rating. The analyses that have overall trip satisfaction as an outcome variable will have the following predictor variables: 1) average number of aircraft encountered per trip day, 2) the time from the trip day with the longest time of aircraft encounters, and 3) average daily maximum loudness rating.

Individual difference variables. Individual difference variables associated with aircraft that were collected included the number of aircraft backpackers expected to encounter and preferences about the number of aircraft they would encounter. Both expectations and preferences are likely to influence how actual encounters with aircraft affect visitor's experience. Park management, however, may only be able to influence people's expectations (e.g., through information) and not their preferences. As there is no practical way of modifying people's preferences, these data were not included in the analyses. The expectations data were collected during the pre-trip interview (see p. 103

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for specific wording of question). Respondents who answered "no expectations" or "couldn't say/don't know" (33 of 219 or 11.3%) were excluded from the analyses in order to obtain a continuous variable. Although it provides a major benefit in simplifying subsequent analyses, this exclusion removes a small group of backpackers from the analysis whose reactions to aircraft may be considerably different from those of the rest of the sample. It also removes the possibility of testing whether the presence/absence of expectations predicts the measures of trip experience that were examined.

Results of Dominance Analyses

These analyses assessed the relative dominance of the predictor variables associated with aircraft encounters in predicting the outcome variables associated with trip experience. Details about the variables included in each of the analyses are described above.

Analyses of a variety of variables collected in the backpacker survey indicated that local Alaskan residents (86.2% of whom were seasonal employees of local businesses) differed from other respondents. Accordingly, each dominance analysis was conducted for all respondents, and after dropping local Alaskan residents from the dataset. No differences were found that would change the general conclusions from those reported for all respondents (see Table 5.2).

As can be seen in Table 5.2, the average daily maximum loudness rating was the dominant predictor of annoyance with aircraft and overall trip satisfaction. No variable emerged as a dominant predictor for effect of aircraft on overall enjoyment, although expectations about aircraft encounters was the least dominant predictor. Not surprisingly, the four predictor variables explained more of the total variance for the outcome variables directly associated with aircraft (annoyance and effect of aircraft on overall enjoyment) than for the general outcome variable of overall trip satisfaction.

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Table 5.2. Summary of Relative Dominance for Each Outcome Variable

Predictor Variables	Relative Dominance for Each Outcome Variable		
	Annoyed by aircraft	Effect of aircraft on overall enjoyment	Overall trip satisfaction
Expectations	4 (4)	4 (4)	* (3)
Number of encounters	2 (*)	* (*)	* (4)
Time of encounters	3 (*)	* (*)	* (2)
Loudness	1 (1)	* (*)	1 (1)
Total R ²	.360 (.392)	.252 (.229)	.108 (.112)

Note: 1 = Most Dominant, 4 = Least Dominant, * Dominance could not be assigned. Figures in parentheses represent results for data excluding local AK residents.

Results of Regression Analyses

The dominance analysis sought to determine which aspect of aircraft encounters best predicted the measures of trip experience. However, it provided no indication of the magnitude of the predictive ability associated with each predictor variable. Perhaps more important, the dominance analysis focused on the direct predictive effects of the variables and did not examine the possibility that several aspects of the aircraft encounters might interact with each other. The purpose of the regression analyses was to determine whether the measured aspects of aircraft encounters *and their two-way interactions* were significant predictors of each of the outcome variables. Details about the variables included in these analyses are described above in the first part of this section. Table 5.3 shows the results of the regression analyses.

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Table 5.3. Summary of Regression Analyses. (Analyses for local AK residents did not support different conclusions.)

All Respondents	Annoyed by aircraft		Effect of aircraft on overall enjoyment		Overall trip satisfaction	
	b	p	b	p	b	p
<i>Main Effects</i>						
Expectations	.010	.565	.013	.333	.018	.109
Number of encounters	.057	.073	.049	.044	-.023	.275
Time of encounters	.020	.081	.020	.024	-.007	.366
Loudness	1.202	<.001	.510	.001	.387	.008
<i>2-Way Interactions</i>						
Time by Number	-.004	.113	-.002	.292	-.001	.513
Time by Loudness	-.044	.068	-.037	.053	.012	.499
Number by Loudness	-.028	.474	.062	.042	.008	.783
Time by Expectations	-.003	.386	.062	.845	.0002	.940
Number by Expectations	-.003	.763	-.002	.819	-.003	.745
Loudness by Expectations	-.023	.704	.025	.597	.032	.476
Total R ²	.430		.300		.117	

As shown by the main effects listed in Table 5.3, the average daily maximum loudness rating was a significant predictor of all three outcome variables. As the average loudness of the loudest aircraft encountered per trip day increased: 1) the level of annoyance with aircraft increased, 2) the degree to which aircraft detracted from overall enjoyment increased, and 3) overall trip satisfaction decreased. No other predictors or their interactions were significant predictors of annoyance with aircraft or overall trip satisfaction.

For the outcome variable, *effect of aircraft on overall enjoyment*, there were significant predictors other than the average daily maximum loudness rating. Other significant main effects included the number of aircraft encountered per trip day and the average length of time of encounters per trip day. Increases in both the number of aircraft

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encountered and the length of time of those encounters were associated with greater detracting from overall enjoyment. The only two-way interaction that reached significance was the interaction between number of encounters and loudness of encounters. Encountering more aircraft had a greater impact on (detracted more from) overall trip enjoyment when the daily maximum loudness rating of aircraft was louder than when it was quieter (or couldn't be heard at all).

Conclusions of Dominance and Regression Analyses

One goal of these analyses was to provide information useful in evaluating the impact of aircraft encounters on the quality of backpackers' trip experiences. The finding above that is most relevant to this goal is the predictive relationship between the average daily maximum loudness rating and overall trip satisfaction. Recall that overall trip satisfaction is generally insensitive to manageable aspects of trip experience. For example, it is common for measures of crowding or ratings of park facilities to be unrelated to overall trip satisfaction. Accordingly, the observed evidence of a relationship between aircraft encounters and overall trip satisfaction represents a potentially important effect. However, caution is necessary in interpreting this finding because the relationship could result from a combination of factors other than a causal relationship in which the noise of aircraft encounters decrease satisfaction. For example, low clouds and poor visibility might cause aircraft to fly lower (increasing noise) while also decreasing the quality of backpackers' experiences. Future research would be necessary to rule out such alternate explanations before concluding that these results indicate that the noise of aircraft encounters decreases backpacker satisfaction.

A second goal of these analyses was to provide information useful in assessing various alternatives for mitigating the negative impacts of aircraft on trip experiences. These analyses (like the results of the Aircraft Information Experiment) suggest that providing information aimed at altering expectations is unlikely to be effective. Expectations (alone, or in interaction with experiences with aircraft) were not predictive of annoyance with aircraft, impacts of aircraft on trip enjoyment, or overall trip satisfaction. It is important to note that approximately ten percent of the original sample who did not have expectations were not included in these analyses. But even if

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information programs leading to accurate expectations in that group were to mitigate negative impacts of aircraft (a conclusion that is far from certain), the present analyses suggest that such programs would still be ineffective for almost 90 percent of backpackers.

The regression analyses suggest that efforts to mitigate aircraft impacts could most effectively focus on reducing the noise that backpackers hear. Of the three variables measuring aircraft encounters, the average daily maximum loudness rating that backpackers reported was clearly the strongest predictor of annoyance with aircraft and overall trip satisfaction. It also predicted the impacts of aircraft on trip enjoyment at least as well as the other variables. Finally, the few interactions among the predictor variables that approached or exceeded statistical significance in predicting the outcome variables all involved the average daily maximum loudness.

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VI. Trip Satisfaction

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Denali backpacker survey respondents were asked a variety of questions to assess their satisfaction with their backcountry trip. These questions were included in the mail survey and therefore, findings represent all hikers. This section describes backpackers' satisfaction with various aspects of their trip including the availability of information and their overall trip satisfaction.

VI. Trip Satisfaction

VI. Trip Satisfaction

Highlights

- Most backpackers rated their backcountry trip as either “Very Good” (59.5%) or “Good” (35.8%). Only 1.5 percent of backpackers rated their trip as “Poor” (see Figure 6.11).
- At least two-thirds of backpackers reported being “Satisfied” or “Very Satisfied” with ten selected aspects of their trip (see Figures 6.1-6.10). The greatest proportion of backpackers reported being dissatisfied or very dissatisfied with “information on backcountry zones” (14.3% of hikers) followed by “the amount of wildlife seen” (12.3% of hikers). Review of Figures 6.1 through 6.10 suggests that “descriptions of the backcountry zones” is the aspect of the trip with which people were least satisfied.

VI. Trip Satisfaction

VI. Trip Satisfaction

Satisfaction with Various Aspects of Trip

Mail Questionnaire

18. How satisfied or dissatisfied were you with the following aspects of this backcountry trip?

Please circle one response code for each aspect. The response codes are defined as follows:

VS	= VERY SATISFIED
S	= SATISFIED
N	= NEUTRAL
D	= DISSATISFIED
VD	= VERY DISSATISFIED

- | | | | | | |
|--|----|---|---|---|----|
| a) Your experience in obtaining a backcountry travel permit..... | VS | S | N | D | VD |
| b) The shuttle bus service..... | VS | S | N | D | VD |
| c) The amount of wildlife you saw..... | VS | S | N | D | VD |
| d) The variety of wildlife species you saw..... | VS | S | N | D | VD |
| e) <u>Information on:</u> | | | | | |
| Backcountry rules and regulations | VS | S | N | D | VD |
| Description of backcountry zones | VS | S | N | D | VD |
| Day-to-day use levels for backcountry zones..... | VS | S | N | D | VD |
| River crossing hazards..... | VS | S | N | D | VD |
| Wildlife hazards..... | VS | S | N | D | VD |
| f) This research project..... | VS | S | N | D | VD |

VI. Trip Satisfaction

FIGURE 6.1: Mail Survey, Q-18
DEGREE OF SATISFACTION WITH EXPERIENCE IN OBTAINING BACKCOUNTRY PERMIT

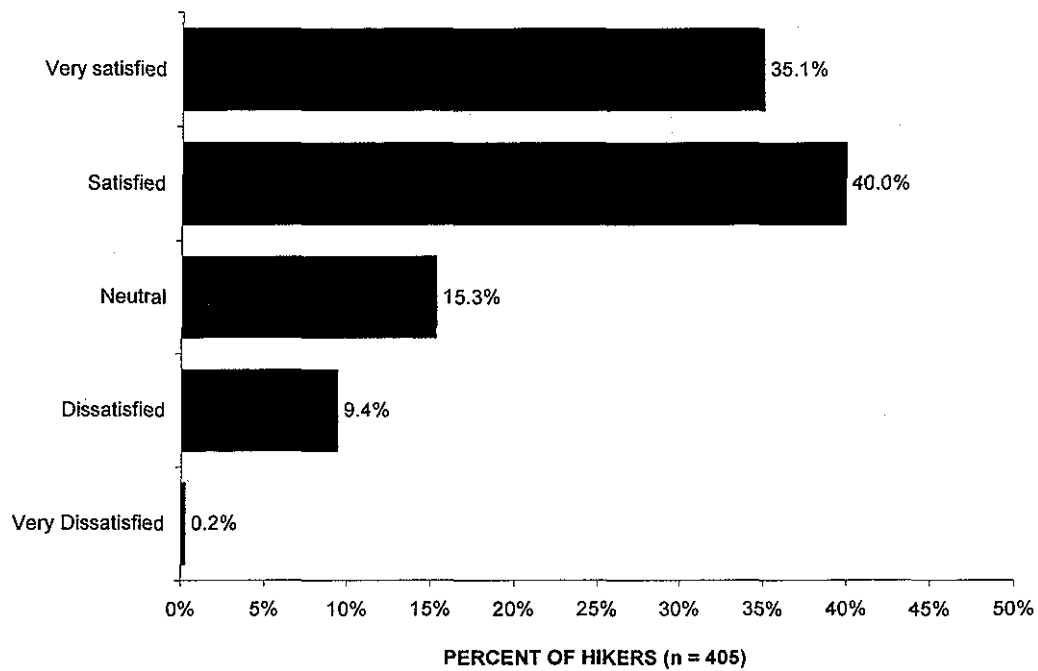
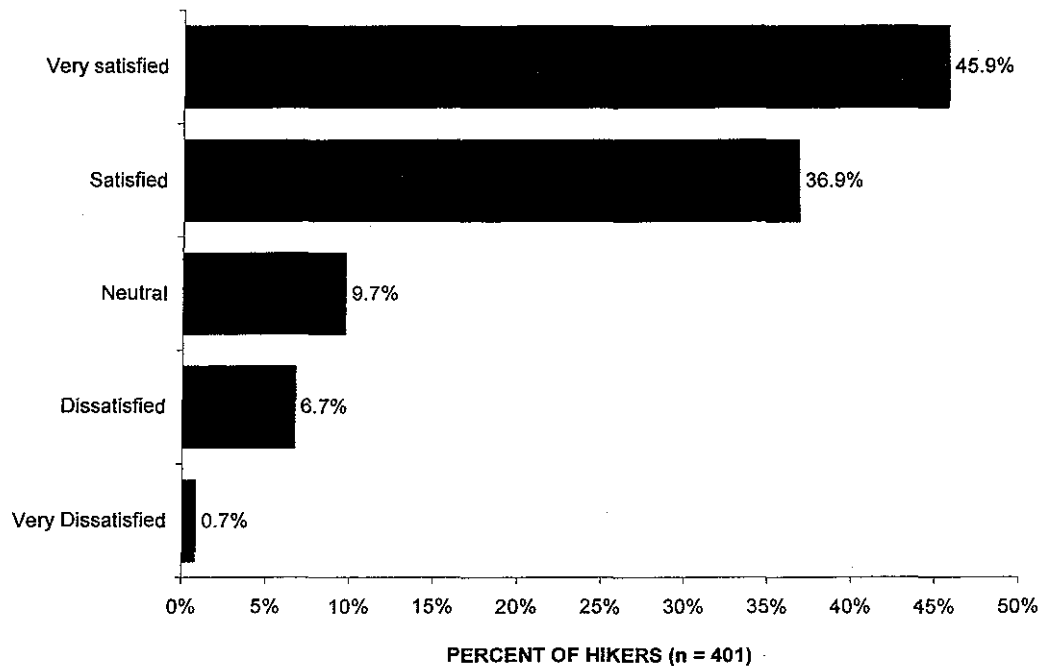


FIGURE 6.2: Mail Survey, Q-18
DEGREE OF SATISFACTION WITH SHUTTLE BUS SERVICE



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FIGURE 6.3: Mail Survey, Q-18
DEGREE OF SATISFACTION WITH AMOUNT OF WILDLIFE SEEN

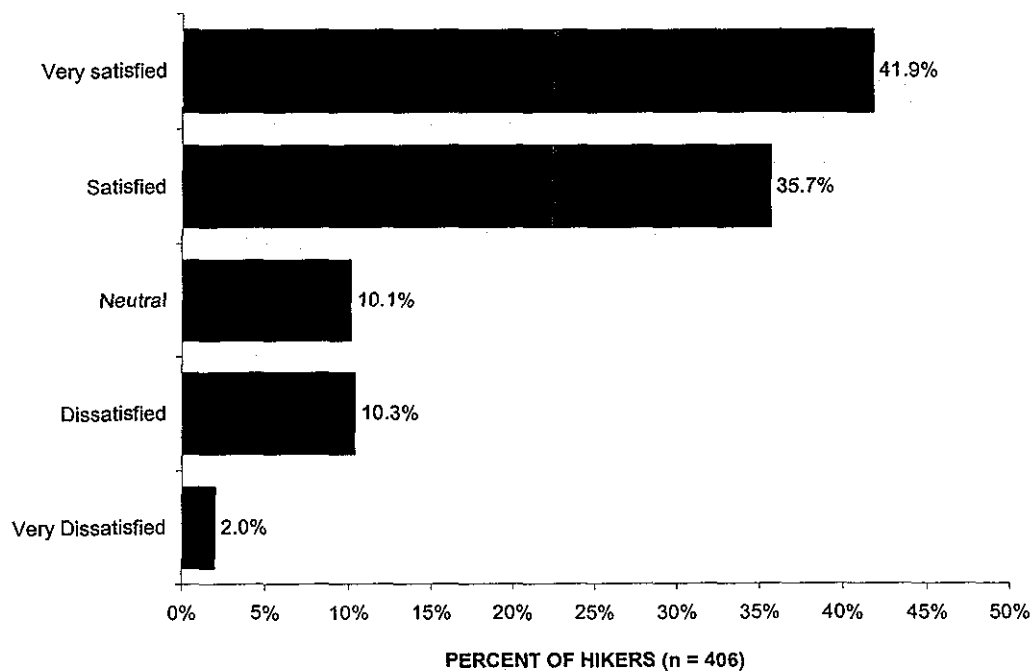
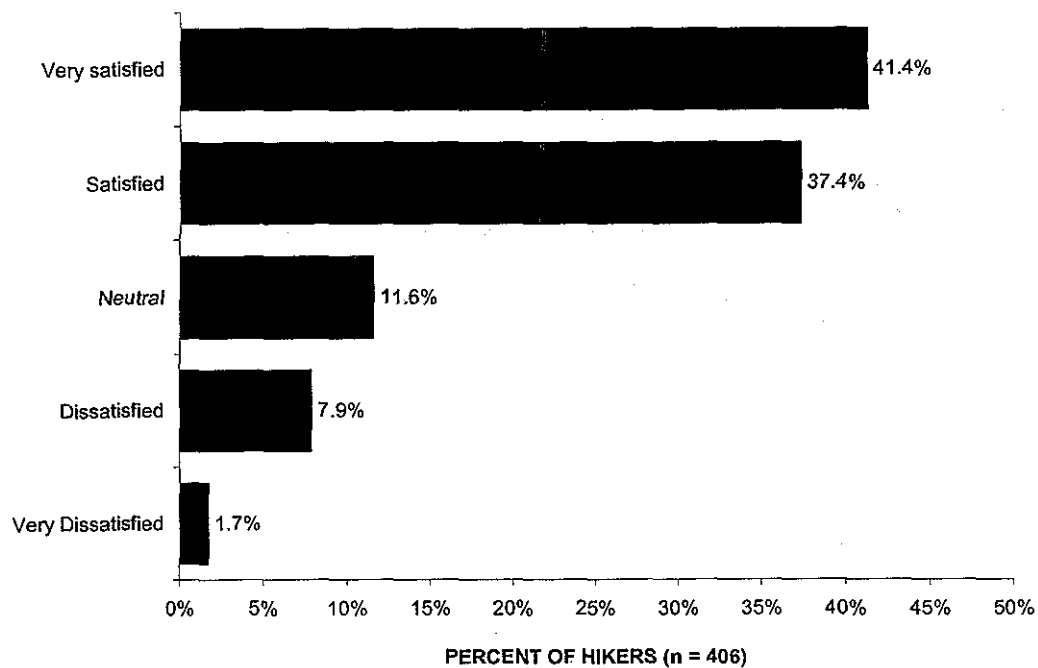


FIGURE 6.4: Mail Survey, Q-18
DEGREE OF SATISFACTION WITH VARIETY OF WILDLIFE SEEN



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FIGURE 6.5: Mail Survey, Q-18
DEGREE OF SATISFACTION WITH INFORMATION ON BACKCOUNTRY RULES AND REGULATIONS

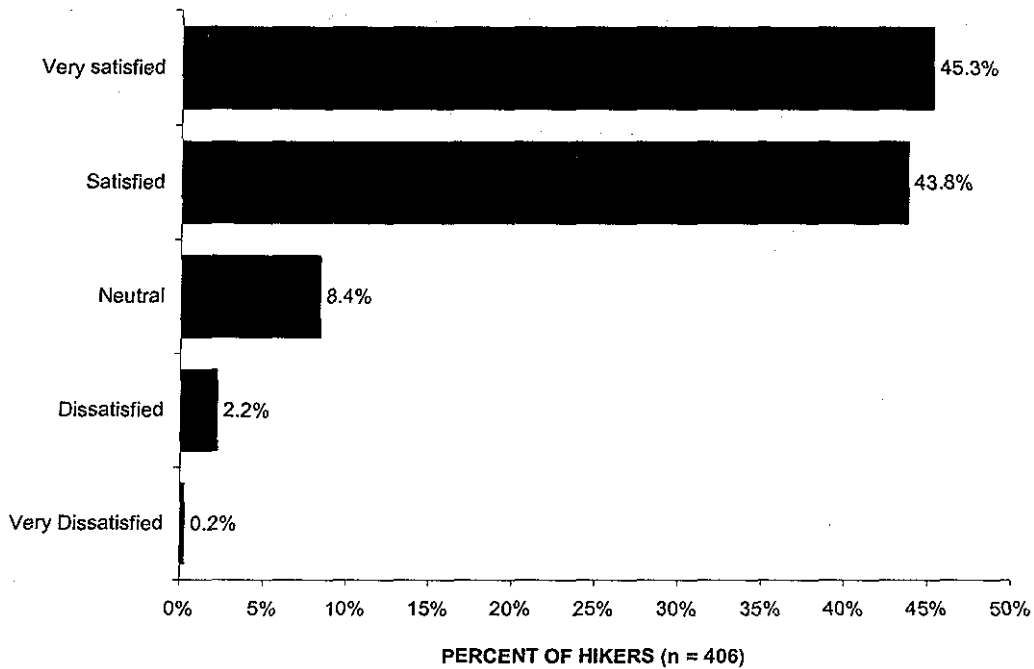
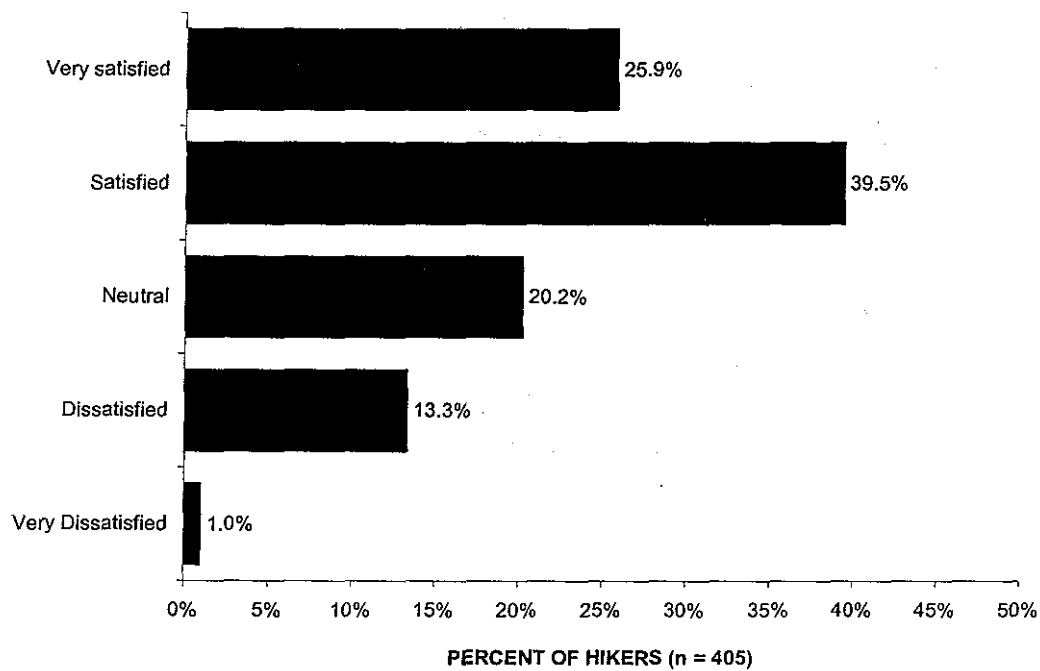


FIGURE 6.6: Mail Survey, Q-18
DEGREE OF SATISFACTION WITH INFORMATION ON BACKCOUNTRY ZONES



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FIGURE 6.7: Mail Survey, Q-18
DEGREE OF SATISFACTION WITH INFORMATION ON DAY-TO-DAY USE LEVELS FOR BACKCOUNTRY ZONES

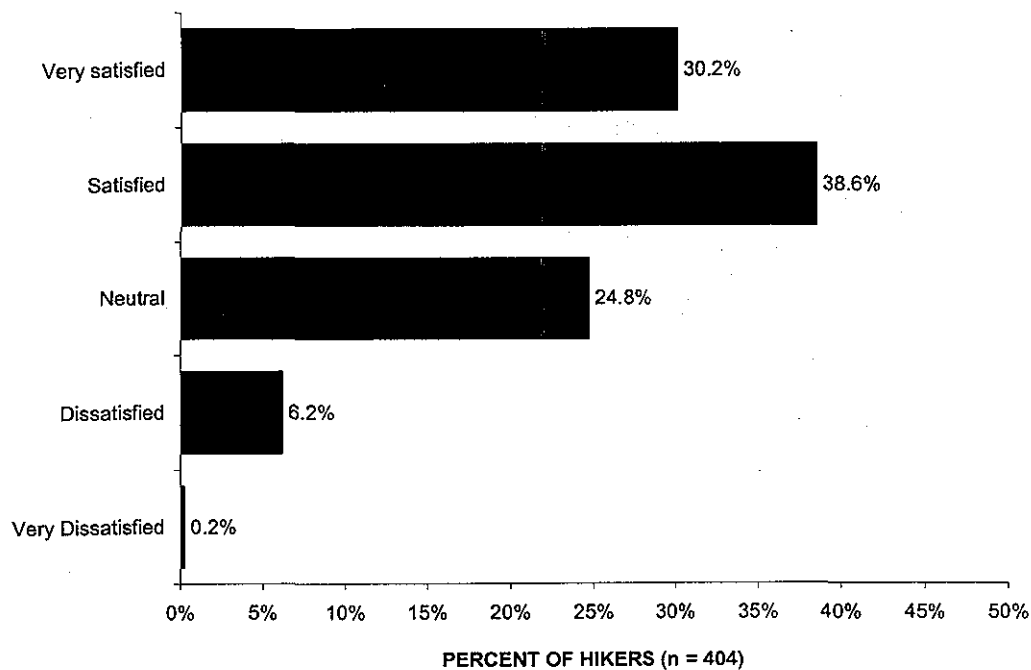
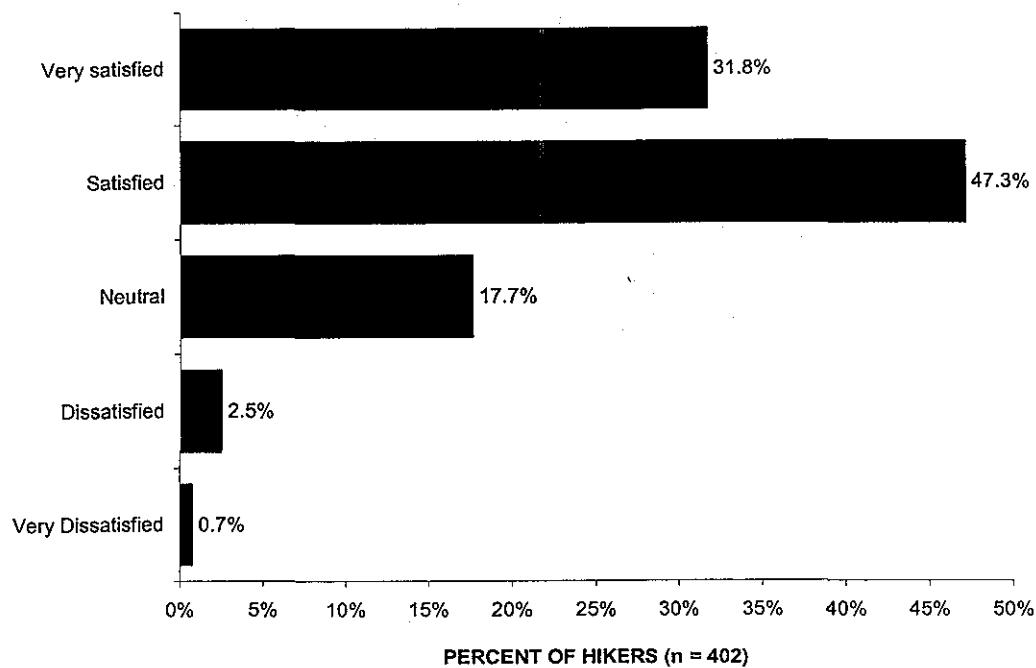


FIGURE 6.8: Mail Survey, Q-18
DEGREE OF SATISFACTION WITH INFORMATION ON RIVER CROSSING HAZARDS



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FIGURE 6.9: Mail Survey, Q-18
DEGREE OF SATISFACTION WITH INFORMATION ON WILDLIFE HAZARDS

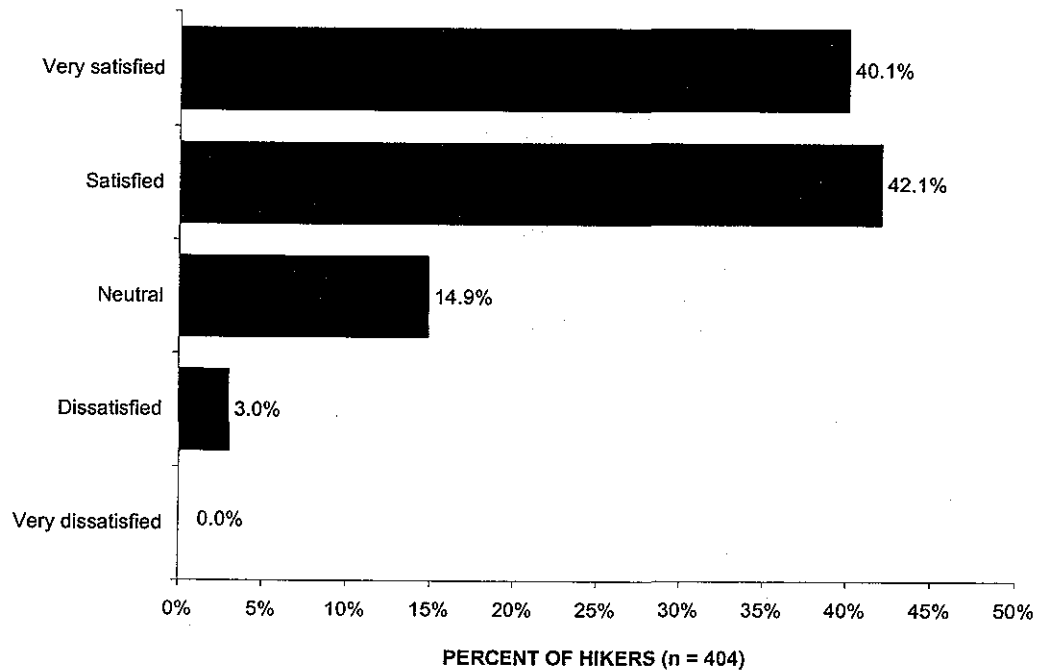
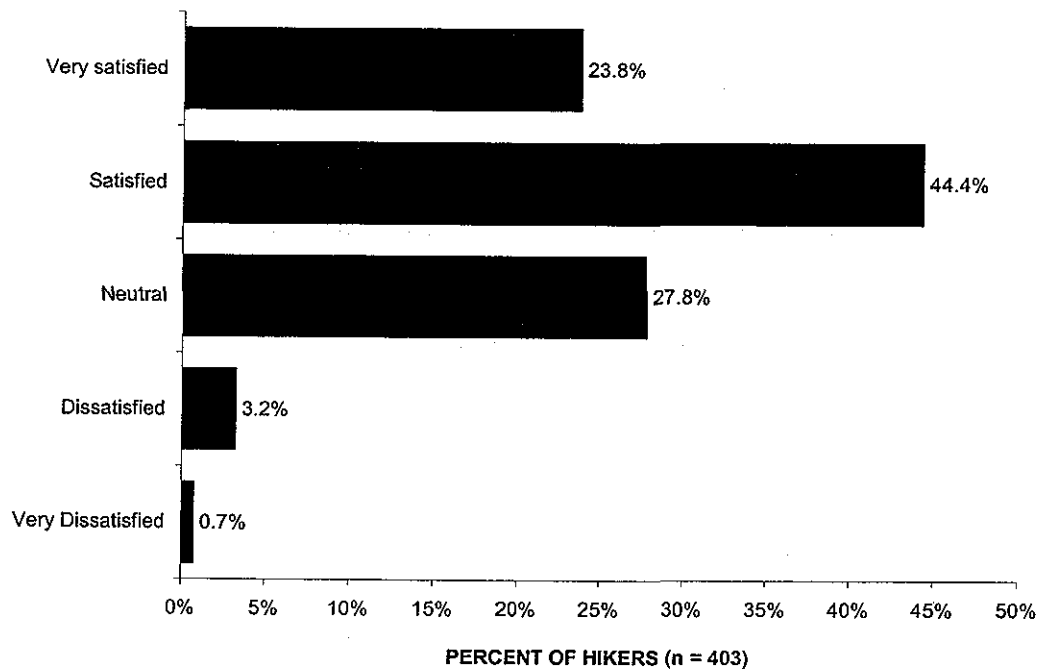


FIGURE 6.10: Mail Survey, Q-18
DEGREE OF SATISFACTION WITH INFORMATION ON RESEARCH PROJECT



VI. Trip Satisfaction

Overall Trip Satisfaction

Mail Questionnaire

19. Overall, how would you rate this backcountry trip? (Circle one response.)

Very Good

Good

Neither Good Nor
Poor

Poor

Very Poor

FIGURE 6.11: Mail Survey, Q-19
OVERALL SATISFACTION WITH BACKCOUNTRY TRIP

